



# TRANSCRIPT OF RECORD.

---

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1898.

No. 462.

---

THE COLUMBUS CONSTRUCTION COMPANY, PLAINTIFF  
IN ERROR,

*vs.*

THE CRANE COMPANY.

---

IN ERROR TO THE CIRCUIT COURT OF THE UNITED STATES FOR  
THE NORTHERN DISTRICT OF ILLINOIS.

---

FILED OCTOBER 27, 1898.

(17,047.)





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COLUMBUS CONSTRUCTION COMPANY  
22015, 7/5.  
CRANE COMPANY.

MR. GEORGE HUNT,  
MR. J. R. CUSTER,  
MR. S. S. GREGORY.

MR. EDWIN WALKER,  
MR. NORMAN WILLIAMS,  
MR. CHARLES S. HOLT,  
MR. ARTHUR D. WHEELER,  
MR. RUSSELL M. WING,  
MR. THOMAS L. CHADBOURNE, JR.,  
MR. HOWARD E. LEACH.

*Attorneys for Defendant.*



- 2      Pleas in the Circuit Court of the United States for the North-      Pleas.  
ern District of Illinois—Northern Division, begun and held at  
the United States Court room, in the City of Chicago, in said  
district, before the Honorable William H. Seaman, District  
Judge of the United States for the Eastern District of Wis-  
consin, on Wednesday, the second day of March, in the year  
of our Lord, one thousand eight hundred and ninety-eight, of  
the December term of said court, 1897, and of our independ-  
ence the one hundred and twenty-third year. \* \*

S. W. BURNHAM, *Clerk*.

Columbus Construction Company,	}	<i>Assumpsit.</i>
22,015 <i>vs.</i>		
Crane Company.		

Be it remembered that on this day to wit: the twenty-third day of May, A. D. 1891, came the Columbus Construction Company, by its attorneys, Gregory, Booth and Harlan, and filed in the clerk's office of said court, its præcipe and bond for costs, which said præcipe and bond are respectively in the words and figures following, to wit:



## PRÆCIPE.

UNITED STATES CIRCUIT COURT, NORTHERN DISTRICT OF ILLINOIS.

Columbus Construction Company, a  
corporation existing under and by  
virtue of the laws of the State of  
New Jersey, and a citizen of the  
State of New Jersey,

*vs.*

The Crane Company, a corporation  
existing under and by virtue of the  
laws of the State of Illinois, and a  
citizen of the State of Illinois, de-  
fendants.

The clerk of said court will issue a summons in the above en-  
titled cause in a plea of trespass on the case on promises to the  
damage of the plaintiff in the sum of one million (\$1,000,000)  
dollars, and direct the same to the marshal to execute and make it  
returnable to the July term of said court, A. D. 1891.

GREGORY, BOOTH & HARLAN,  
*Plaintiff's Attorneys.*

CHICAGO, May 23rd, 1891.

(Endorsed): Filed this 23rd day of May, A. D. 1891.

WM. H. BRADLEY, *Clerk.*

Filed 3

## BOND FOR COSTS.

UNITED STATES OF AMERICA, }  
NORTHERN DISTRICT OF ILLINOIS. } ss.

CIRCUIT COURT, July Term, A. D. 1891.

Columbus Construction Company

*vs.*

Crane Company.

} *In Assumpsit.*

I enter myself security for the costs in this cause, and promise  
to pay all costs which may accrue to the opposite party, in this ac-  
tion or to any of the officers of this court; and in default of pay-  
ment by the plaintiff of any costs ordered or adjudged to be paid by  
plaintiff, I hereby agree and stipulate that execution may issue  
against my property for any costs taxed against plaintiff.

Dated this 23rd day of May, A. D. 1891.

S. S. GREGORY.

(Endorsed): Filed May 23, A. D. 1891.

WM. H. BRADLEY, *Clerk.*

On the same day to wit: the twenty-third day of May, 1891, a summons issued out of the clerk's office, directed against the Crane Company, a corporation, etc., which said summons, together with the marshal's return thereon endorsed is in the words and figures following, to wit:

Summons  
May 23

SUMMONS.

CIRCUIT COURT OF THE UNITED STATES OF AMERICA,  
NORTHERN DISTRICT OF ILLINOIS, NORTHERN  
DIVISION. } ss.

THE UNITED STATES OF AMERICA.

*To the marshal of the Northern District of Illinois, GREETING:*

We command you to summon the Crane Company, a corporation, etc., if found in your district, to be and appear before our judges of our Circuit Court of the United States for the Northern District of Illinois, on the first day of the next term thereof, to be holden at Chicago, in the district aforesaid, on the first Monday of July next, to answer unto Columbus Construction Company, a corporation, etc., of a plea of trespass on the case upon promises, to its damage, as is alleged, of one million dollars, and have you then and there this writ.

Witness, the Hon. Melville W. Fuller, Chief Justice of the Supreme Court of the United States of America, at Chicago, aforesaid, this 23rd day of May in the year of our Lord, one thousand eight hundred and ninety-one, and of our independence the 115th year.

[SEAL.]

WILLIAM H. BRADLEY, *Clerk.*

4

MARSHAL'S RETURN.

I have served the within writ personally, upon the within named the Crane Company, a corporation, etc., by delivering to R. T. Crane, president of the aforesaid company, a true copy thereof this 25th day of May, A. D. 1891.

Marshal  
filed M  
1891.

FRANK HITCHCOCK, *U. S. Marshal.*

By GEO. N. JONES, *Deputy.*

1 service.....	\$2.00
1 copy.....	.50
2 mileage.....	.12
1 return.....	.10

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\$2.72

(Endorsed): Filed June 4, A. D. 1891.

WM. H. BRADLEY, *Clerk.*

Afterwards, to wit: on the twenty-sixth day of June, 1891, came the plaintiff in said entitled cause by its attorneys, Gregory, Booth and Harlan, and filed in the clerk's office of said court its declaration, which said declaration is in the words and figures following, to wit:

DECLARATION.

IN THE CIRCUIT COURT OF THE UNITED STATES, NORTHERN DISTRICT OF ILLINOIS.

UNITED STATES OF AMERICA, }  
NORTHERN DISTRICT OF ILLINOIS. } ss.

The plaintiff, Columbus Construction Company, a corporation organized and existing under the laws of the State of New Jersey, and a citizen of that state, by Gregory, Booth & Harlan, its attorneys, complains of Crane Company, a corporation organized and existing under the laws of the State of Illinois, and a citizen of that state, of a plea of trespass on the case on premises.

For that whereas, heretofore, to wit: on the 28th day of June, 1890, the said defendant then and there, to wit: at the city of Chicago, in said district, agreed to sell to this plaintiff and in consideration of the facilities and representations of the defendant made to said plaintiff, as in said contract alleged said plaintiff agreed to purchase of the defendant wrought iron standard line pipe, as follows, that is to say:

Two hundred and sixty miles of eight-inch wrought iron standard line pipe to weigh not less than 27.48 pounds per lineal foot. Ten to twenty-miles of ten-inch wrought iron standard line pipe of weigh not less than thirty-nine pounds per lineal foot, exclusive to weight of collar. Ten to twenty miles of six-inch wrought iron standard line pipe to weigh not less than 18.29 pounds per lineal foot, exclusive of weight of collar. Ten to twenty miles of four-inch wrought iron standard line pipe to weigh not less than 10.39 pounds per lineal foot, exclusive of weight of collar. Ten to twenty miles of three-inch wrought iron standard line pipe to weigh not less than 7.35 pounds per lineal foot, exclusive of weight of collar. Six thousand feet of five and five-eighths wrought iron standard casing, and that the price to be paid therefor as aforesaid should not be more than ninety-one cents per lineal foot for said eight-inch pipe, the price on the other sizes of said pipe to be in proportion to that price to be thereafter agreed upon between the parties.

Which said price of ninety-one cents should include as a part thereof two and one-half per cent., which in and by the agreement of the parties was denominated a commission to be paid to said defendant, but was in truth and in fact a part of the purchase price of said pipe, to be paid by said plaintiff to said defendant, which said pipe the said defendant agreed, unless prevented by strikes and causes beyond its control, to deliver or to secure the delivery thereof to the plaintiff during the months of July, August and September, at such places as should be thereafter designated by the plaintiff, and not later than October 1, 1890, and to deliver all the eight-inch pipe aforesaid, unless so prevented as aforesaid, so that thirty-seven miles thereof should be delivered in July, not less than one hundred and twenty-three miles in August, and the remainder thereof undelivered, in September, 1890, and prior to the fifteenth day of that month if possible.

For which said iron pipe so to be delivered as aforesaid the said plaintiff agreed to pay the stipulated price in cash.

And that in and by said agreement so made as aforesaid, it was provided that said plaintiff should pay cash for said pipe, and that all of said pipe should be in conformity with certain specifications, and certain conditions and tests as to quality for eight inch pipe, as in said contract was specified, which said specifications were, as was said contract, in writing, and were attached thereto as Exhibit "B," and that it was provided in and by said specifications, among other things, that the said eight-inch standard line pipe should be delivered to the plaintiff and should be made from soft iron, free from blisters and other imperfections, and guaranteed to stand a working line pressure of one thousand pounds to the square inch, so proved and tested in lines, when tested by said plaintiff under said working pressure.

And that also said pipe should not be considered as accepted by said plaintiff by reason of any payments made therefor, so as to relieve the said defendant from liability on account of its defective character, until the whole should have been laid and tested in line and approved.

And that heretofore and after the date of said agreement as aforesaid, to wit: on the 1st day of July, in the year 1890, at Chicago, in said district, the said defendant company furnished to the plaintiff a statement showing the prices at which said defendant would sell and deliver to the said plaintiff the said pipe so agreed to be sold and delivered as aforesaid, and that the prices so fixed as aforesaid, were, sixty miles of eight-inch pipe manufactured by the Paige Tube Company, at eighty-eight and six-tenths cents per foot, sixty miles of said eight-inch pipe manufactured by the National Tube Works Company, at eighty-eight and five-tenths cents per

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foot, forty miles of said eight-inch pipe manufactured by the Pittsburgh Tube Company, at eighty-eight and five-tenths cents per foot, forty miles of said eight-inch pipe manufactured by the Reading Iron Company, at eighty-eight cents per foot, twenty miles of said eight-inch pipe manufactured by Morris Tasker & Company, at eighty-eight cents per foot, twenty miles of said eight-inch pipe manufactured by Sprang, Chalfant & Company, at eighty-eight cents per foot, twenty miles of said eight-inch pipe manufactured by the said American Tube & Iron Company, at eighty-eight cents per foot, and also ten miles of three-inch pipe at about twenty-two cents per foot, ten miles of four-inch pipe at about thirty cents per foot, ten miles of six-inch pipe at about fifty-five cents per foot, and ten miles of ten-inch pipe at one dollar and thirty cents per foot, to which the defendant added the said percentage of two and one-half per cent. hereinbefore mentioned and referred to.

And that thereafter and on various days and dates between the date of said contract and the twenty-fourth day of September, 1890, the said plaintiff named to the said defendant points for the delivery of said pipe, and that from the 21st day of August, 1890, to November 3rd, 1890, the said defendant delivered to the said plaintiff 95.14 miles of eight-inch pipe purporting to be of such character and quality as was called for by the said contract, and which the said defendant was bound to deliver to the said plaintiff, and at various times, to wit: between the sixth day of September, and the twenty-fourth of September, 1890, the said defendant did accordingly deliver to said plaintiff, 10.11 miles of ten-inch pipe, which purported to be of the character which it had by the said contract agreed to sell to said plaintiff, and at various dates, to wit: from the 25th day of August to the 15th day of October, 1890, delivered to said plaintiff 1.94 miles of six-inch pipe which purported to be the character and quality which by the said contract defendant was bound to sell and deliver to the said plaintiff, and that  
5 at various dates, to wit: from the 25th of August to November 3rd, 1890, the said defendant delivered to the said plaintiff 3.54 miles of four-inch pipe, which purported to be of the character and quality which by the contract as aforesaid, the said defendant was bound to deliver to the said plaintiff, and that at various dates, to wit: between the 15th of August, and the 18th of August, 1890, the said defendant delivered to the said plaintiff 10.24 miles of three-inch pipe which purported to be of the character and quality, which by the said contract said defendant was bound to sell and deliver to said plaintiff.

All of which pipe was caused to be so shipped by the said defendant to said plaintiff as in compliance with and execution on its part of its said contract in this regard.

That all of said pipe was not delivered within the times limited by the contract for the delivery thereof nor was the same promptly delivered upon orders of the said plaintiff to the said defendant therefor. That said defendant at various dates, to wit: from August 23rd, to August 28th, 1890, delivered to said plaintiff as in compliance with its said contract, 6,000 feet of five and five-eighths-inch casing.

And that heretofore, to wit: on the 15th day of September, 1890, the said plaintiff notified the defendant that it would require the delivery of all pipe contracted for prior to October 1, 1890. And that after the delivery of said pipe, including said casing as aforesaid, the said plaintiff never at any time accepted the same, nor agreed to receive it as in compliance with said contract, nor as of the quality prescribed in said contract, and that the same was not, nor was any of it, of the quality so prescribed and required in said contract, in that, it did not conform to the specifications and requirements in said contract mentioned and described, and that said pipe was not made from soft iron free from blisters and other imperfections and sufficiently strong and of a quality such as to stand a working line pressure of one thousand pounds to the square inch when proved and tested in lines, but on the contrary, was of a weak, imperfect, poor and defective quality, and wholly unable to stand a pressure not in excess of one thousand pounds to the square inch, and was not such pipe, nor was any of it, as when subjected to such a pressure so in line, would prove tight.

That accordingly, after said plaintiff had received said pipe and after a reasonable opportunity for inspection and testing of the same, within a reasonable time after its imperfections, insufficiency and defective character had become known to the plaintiff, said plaintiff heretofore and prior to bringing this suit, to wit: on the 23rd day of May, 1891, at Chicago, in said district, rejected said pipe as not being such pipe as by the terms of said contract the said  
6 defendant was bound to deliver to the said plaintiff, and offered to the said defendant to return the same as not being of the quality provided for in said contract.

And that the said defendant not regarding its said promise and undertaking did not nor would it, although often requested so to do, furnish such goods and merchandise as aforesaid, as required by said contract, but wholly neglected and refused so to do, and therein made default, and said defendant then and there so negligently and improperly conducted and behaved in and about furnishing of said goods, wares and merchandise, that the same were by reason thereof not of the quality and character provided for in said contract, and thereby the plaintiff not only lost all benefit, profit, and advantage which it might and could have derived and

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acquired from the purchase of the said goods and merchandise but was also put to great expense of its moneys, to wit: the sum of two hundred thousand dollars in and about the shipping, handling and laying of said pipe, and also lost other moneys, to wit: the sum of six hundred thousand dollars which was paid by it to the said defendant as and for the purchase price of the said goods and merchandise, and also sustained great loss and damage on occasion of its not being able to use the same at the County of Cook, aforesaid, whereby the said plaintiff having employed large numbers of men and secured teams, wagons, tools and machinery to lay said pipe to use, was greatly delayed, damaged and hindered in the prosecuting of said work by the said failure of said defendant to comply with its contract in promptly delivering said pipe and thereby sustained further damage and loss to wit: in the sum of two hundred thousand dollars, at Chicago, in said district, and has been and is by reason of the premises otherwise greatly injured and damaged, to wit: at Chicago, in said district.

By reason whereof the said defendant became liable to pay to the said plaintiff the said several sums of money so due to the said plaintiff by reason of the failure of the said defendant to keep and perform its said contract and agreement with the said plaintiff, as aforesaid, and being so liable the said defendant, in consideration thereof, afterwards, to wit: on the twenty-second day of May, in the year 1891, at Chicago, to wit: in said district, undertook and then and there faithfully promised the said plaintiff well and truly to pay unto the said plaintiff the said several sums of money so due to said plaintiff by reasons of the premises aforesaid.

And for that, whereas, also, heretofore, to wit: on the 28th day of June in the year 1890, the said defendant then and there, to wit: at the City of Chicago, in said district, agreed to sell to this plaintiff, and in consideration of the facilities and representations of the defendant made to said plaintiff, as in said contract alleged,  
7 said plaintiff agreed to purchase of the defendant wrought iron standard line pipe as follows, that is to say:

Two hundred and sixty miles of eight-inch wrought iron standard line pipe to weigh not less than 27.48 pounds per lineal foot. Ten to twenty miles of ten-inch wrought iron standard line pipe to weigh not less than thirty-nine pounds per lineal foot, exclusive of weight of collar. Ten to twenty miles of six-inch wrought iron standard line pipe to weigh not less than 18.29 pounds per lineal foot, exclusive of weight of collar. Ten to twenty miles of four-inch wrought iron standard line pipe to weigh not less than 10.39 pounds per lineal foot exclusive of weight of collar. Ten to twenty miles of three-inch wrought iron standard line pipe to weigh not less than 7.35 pounds per lineal foot exclusive of weight of collar. Six thou-



sand feet of five and five-eighths wrought iron standard casing, and that the price to be paid therefor as aforesaid, should not be more than ninety-one cents per lineal foot for said eight-inch pipe, the price on the other sizes of said pipe to be in proportion to that price, to be hereafter agreed upon between the parties.

Which said price of ninety-one cents should include as a part thereof two and one-half per cent. which in and by the agreement of the parties was denominated a commission to be paid to said defendant, but was in truth and in fact a part of the purchase price of said pipe, to be paid by said plaintiff to said defendant, which said pipe the said defendant agreed, unless prevented by strikes and causes beyond its control, to deliver or to secure the delivery thereof to the plaintiff, during the months of July, August and September, at such places as should be hereafter designated by the plaintiff, and not later than October 1, 1890, and to deliver all the eight-inch pipe aforesaid, unless so prevented as aforesaid, so that thirty-seven miles thereof should be delivered in July, not less than one hundred and twenty-three miles in August and the remainder thereof undelivered, in September, 1890, and prior to the fifteenth day of that month if possible.

For which said iron pipe so to be delivered as aforesaid, the said plaintiff agreed to pay the stipulated price in cash.

And that in and by said agreement so made as aforesaid, it was provided that said plaintiff should pay cash for said pipe, and that all of said pipe should be in conformity with certain specifications and certain conditions and tests as to quality, for eight-inch pipe as in said contract was specified which said specifications were as was said contract in writing, and were attached thereto as Exhibit "B," and that it was provided in and by said specifications

among other things, that the said eight-inch standard line pipe  
8 should be delivered to the plaintiff and should be made from soft iron free from blisters and other imperfections, and guaranteed to stand a working line pressure of one thousand pounds to the square inch so proved and tested in line, when tested by said plaintiff under said working pressure which said working tests should be made with reasonable promptness. And that said defendant would pay said plaintiff all damages and expenses of every kind sustained by said plaintiff for any defect or defects of said pipe up to the time of such tests.

And that also said pipe should not be considered as accepted by said plaintiff by reason of any payments made therefor so as to relieve the said defendant from liability on account of its defective character, until the whole should have been laid and tested in line and approved.

And that heretofore, and after the date of said agreement as



aforesaid, to wit: on the first day of July, in the year 1890, at Chicago, in said district, the said defendant company furnished to the plaintiff a statement showing the prices at which said defendant would sell and deliver to the said plaintiff the said pipe so agreed to be sold and delivered, as aforesaid, and that the prices so fixed as aforesaid, were: sixty miles of eight-inch pipe manufactured by the Page Tube Company at eighty-eight and six-tenths cents per foot, sixty miles of said eight-inch pipe manufactured by the National Tube Works Company at eighty-eight and five-tenths cents per foot, forty miles of said eight-inch pipe manufactured by the Pittsburgh Tube Company at eighty-eight and five-tenths cents per foot, forty miles of said eight-inch pipe manufactured by the Reading Iron Company at eighty-eight cents per foot, twenty miles of said eight-inch pipe manufactured by Morris Tasker & Company at eighty-eight cents per foot, twenty miles of said eight-inch pipe manufactured by Spang, Chalfant & Company at eighty-eight cents per foot, twenty miles of said eight-inch pipe manufactured by the said American Tube and Iron Company at eighty-eight cents per foot, and also ten miles of three-inch pipe at about thirty cents per foot, ten miles of six-inch pipe at about fifty-five cents per foot, and ten miles of ten-inch pipe at \$1.30 per foot, to which the defendant added the said percentage of two and one-half per cent. hereinbefore mentioned and referred to.

And that thereafter and on various days and dates between the date of said contract and the twenty-fourth day of September, 1890, the said plaintiff named to the said defendant points for the delivery of said pipe, and that from the 21st day of August, 1890, to November 3, 1890, the said defendant delivered to the said plaintiff 95.14 miles of eight-inch pipe purporting to be of such character and quality as was called for by the said contract and which the said

defendant was bound to deliver to the said plaintiff, and at various times, to wit: between the sixth day of September and the twenty-fourth day of September, 1890, the said defendant did accordingly deliver to said plaintiff 10.11 miles of ten-inch pipe which purported to be of the character which it had by the said contract agreed to sell to said plaintiff, and at various dates, to wit: from the 25th of August to the 15th of October, 1890, delivered to said plaintiff 1.94 miles of six-inch pipe which purported to be of the character and quality which by the said contract the said defendant was bound to sell and deliver to the said plaintiff, and that at various dates, to wit: from the 25th of August to November 3, 1890, the said defendant delivered to the said plaintiff 3.54 miles of four-inch pipe which purported to be of the character and quality which by the contract as aforesaid, the said defendant was bound to deliver to the said plaintiff, and that at various dates,

to wit: between the 15th of August, 1890, the said defendant delivered to the said plaintiff 10.24 miles of three-inch pipe which purported to be of the character and quality which by the said contract said defendant was bound to sell and deliver to said plaintiff. All of which pipe was caused to be so shipped by the said defendant to said plaintiff as in compliance with and execution on its part of its said contract in this regard.

That all of said pipe was not delivered within the time limited by the contract for the delivery thereof, nor was the same promptly delivered upon orders of the said plaintiff to the said defendant therefor. That said defendant at various dates, to wit: from August 23 to August 28, 1890, delivered to said plaintiff, as in compliance with its said contract 6,000 feet of five and five-eighths-inch casing.

And that heretofore, to wit: on the 15th day of September, 1890, the said plaintiff notified the defendant that it would require the delivery of all pipe contracted for prior to October 1, 1890. And that after the delivery of said pipe, including said casing, as aforesaid, the said plaintiff never at any time accepted the same, nor agreed to receive it as in compliance with said contract, nor as of the quality prescribed in said contract, and that the same was not nor was any of it of the quality so prescribed and required in said contract, in that it did not conform to the specifications and requirements in said contract mentioned and described, and that said pipe was not made from soft iron, free from blisters and other imperfections and sufficiently strong, and of a quality such as to stand a working line pressure of one thousand pounds to the square inch when proved and tested in lines, but, on the contrary, was of a weak, imperfect, poor and defective quality, and wholly unable to stand a pressure not in excess of one thousand pounds to the square inch, and was not such pipe nor was any of it, as when subjected to such pressure so in line would prove tight.

10 Of all of which the said defendant heretofore, to wit: on the 22nd day of May, 1891, at Chicago, to wit: in said district had notice. And that the said defendant not regarding its said promise and undertaking did not nor would it, although often requested so to do, furnish such goods and merchandise as aforesaid as required by said contract, but wholly neglected and refused so to do, and therein made default, and said defendant then and there so negligently and improperly conducted and behaved in and about the furnishing of said goods, wares and merchandise that the same were by reason thereof not of the quality and character provided for in said contract, but were wholly unfit for the purposes of the said contract, and were of little or no value whereby the plaintiff not only lost all benefit, profit and advantage which it might or could

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have derived and acquired from the purchase of the said goods and merchandise, but was also put to great expense of its moneys, to wit: the sum of \$200,000 in and about the shipping, handling and laying of said pipe, and also lost other moneys, to wit: the sum of \$600,000, which was paid by it to the said defendant as and for the purchase price of the said goods and merchandise, and also sustained great loss and damage on occasion of its not being able to use the same at the County of Cook aforesaid, whereby the said plaintiff having employed large numbers of men, and secured teams, wagons, tools and machinery, to lay side pipe for use, was greatly delayed, damaged and hindered in the prosecuting of said work by the said failure of said defendant to comply with its contract in promptly delivering said pipe and thereby sustained further damage and loss, to wit: in the sum of \$200,000, at Chicago, in said district, and has been and is by reason of the premises, otherwise greatly injured and damaged, to wit: at Chicago, in said district.

By reason whereof the said defendant became liable to pay to the said plaintiff the said several sums of money so due to the said plaintiff by reason of the failure of the said defendant to keep and perform its said contract and agreement with the said plaintiff as aforesaid, and being so liable the said defendant, in consideration thereof, afterwards, to wit: on the twenty-second day of May, in the year 1890, at Chicago, to wit: in said district, undertook and then and there faithfully promised the said plaintiff well and truly to pay unto the said plaintiff the said several sums of money so due to said plaintiff by reason of the premises as aforesaid.

And for that, whereas, also, heretofore, to wit: on the 28th day of June, 1890, the said defendant then and there, to wit: at the City of Chicago, in said district, agreed to buy as the agent of this plaintiff, and to deliver to said plaintiff, and in consideration of the facilities and representations of the defendant made to said plaintiff, as in said contract alleged, which contract with the  
11 papers referring to the subject-matter thereof and attached hereto, are hereby made a part hereof; said plaintiff agreed to receive of the defendant and pay defendant for wrought iron standard line pipe, as follows, that is to say:

Two hundred and sixty miles of eight-inch wrought iron standard line pipe to weigh not less than 27.48 pounds per lineal foot. Ten to twenty miles of ten-inch wrought iron standard line pipe to weigh not less than thirty-nine pounds per lineal foot exclusive of weight of collar. Ten to twenty miles of six-inch wrought iron standard line pipe to weigh not less than 18.29 pounds per lineal foot exclusive of weight of collar. Ten to twenty miles of four-inch wrought iron standard line pipe to weigh not less than 10.39 pounds per lineal foot exclusive of weight of collar. Ten to twenty

miles of three-inch wrought iron standard line pipe to weigh not less than 7.35 pounds per lineal foot exclusive of weight of collar. Six thousand feet of five and five-eighth-inch wrought iron standard casing, and that the price to be paid therefor as aforesaid, should not be more than ninety-one cents per lineal foot for said eight-inch pipe, the price of the other sizes of said pipe to be in proportion to that price, to be thereafter agreed upon between the parties. Which said price of ninety-one cents should include as a part thereof two and one-half per cent. as a commission or compensation to be paid to said defendant, which said pipe the said defendant agreed unless prevented by strikes and causes beyond its control, to deliver or to secure the delivery thereof to the plaintiff during the months of July, August and September, at such places as should be thereafter designated by the plaintiff, and not later than October 1, 1890, and to deliver all the eight-inch pipe aforesaid, unless so prevented as aforesaid, so that thirty-seven miles thereof should be delivered in July, not less than one hundred and twenty-three miles in August, and the remainder thereof undelivered, in September, 1890, and prior to the fifteenth day of that month if possible.

For which the said iron pipe so to be delivered as aforesaid, the said plaintiff agreed to pay the stipulated price in cash.

And that in and by said agreement so made as aforesaid, it was provided that all of said pipe should be in conformity with certain specifications, and certain considerations and tests as to qualify for eight-inch pipe as in said contract was specified, which said specifications were as was said contract in writing and were attached thereto at Exhibit "B," and that it was provided in and by said specifications among other things, that the said eight-inch standard line pipe should be delivered to the plaintiff, and should be made from soft iron, free from blisters and other imperfections, and guaranteed to stand a working line pressure of one thousand pounds to the square inch, so proved and tested in lines when tested  
12 by said plaintiff under said working pressure, which said working tests should be made with reasonable promptness.

And that also said pipe should not be considered as accepted by said plaintiff by reason of any payments made therefor so as to relieve the said defendant from liability, on account of its defective character, until the whole should have been laid and tested in line and approved.

And that heretofore, and after the date of said agreement as aforesaid, to wit: on the first day of July, in the year 1890, at Chicago, in said district, the said defendant company furnished to the plaintiff a statement showing the prices at which said defendant would deliver to the said plaintiff, the said pipe so agreed to be

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bought and delivered as aforesaid, and that the prices so fixed as aforesaid, were, sixty miles of eight-inch pipe manufactured by the Page Tube Company, at eighty-eight and six-tenths cents per foot, sixty miles of said eight-inch pipe manufactured by the National Tube Works Company at eighty-eight and five-tenths cents per foot, forty miles of eight-inch pipe manufactured by the Pittsburgh Tube Company at eighty-five and five-tenths cents per foot, forty miles of said eight-inch pipe manufactured by the Reading Iron Company, at eighty-eight cents per foot, twenty miles of said eight-inch pipe manufactured by Morris Tasker & Company at eighty-eight cents per foot, twenty miles of said eight-inch pipe manufactured by the said American Tube and Iron Company at eighty-eight cents per foot, and also ten miles of three-inch pipe at about twenty-two cents per foot, ten miles of six-inch pipe at about fifty-five cents per foot, and ten miles of ten-inch pipe at one dollar and thirty cents per foot, to which the defendant added the said percentage of two and one-half per cent. hereinbefore mentioned and referred to.

And that thereafter, and on various days and dates between the date of said contract and the twenty-fourth day of September, 1890, the said plaintiff named to the said defendant points for the delivery of said pipe, and that from the 21st day of August, 1890, to November 3, 1890, the said defendant delivered to the said plaintiff, 95.14 miles of eight-inch pipe, purporting to be of such character and quality as was called for by the said contract, and which the said defendant was bound to deliver to the said plaintiff, and at various times, to wit: between the 6th day of September and 24th day of September, 1890, the said defendant did accordingly deliver to said plaintiff 10.11 miles of ten-inch pipe, which purported to be of the character which it had by said contract agreed to deliver to said plaintiff, and at various dates, to wit: from the 25th of August to November 3, 1890, the said defendant delivered to the said plaintiff 3.54 miles of four-inch pipe, which purported to be of the character and quality which by the contract

13 as aforesaid, the said defendant was bound to deliver to the said plaintiff, and that at various dates, to wit: between the 15th of August and the 18th of August, 1890, the said defendant delivered to the said plaintiff 10.24 miles of three-inch pipe, which purported to be of the character and quality which by the said contract said defendant was bound to deliver to said plaintiff.

All of which pipe was caused to be shipped by the said defendant to said plaintiff as in compliance with and execution on its part of its said contract in this regard.

That all of said pipe was not delivered within the times limited by the contract for the delivery thereof, nor was the same

promptly delivered upon orders of the said plaintiff to the defendant therefor. That said defendant at various dates, to wit: from August 23 to August 28, 1890, delivered to said plaintiff as in compliance with its said contract, 6,000 feet of five and five-eighth-inch casing.

And that heretofore, to wit: on the 15th day of September, 1890, the said plaintiff notified the defendant that it would require the delivery of all pipe contracted for prior to October 1, 1890. And that after the delivery of said pipe, including said casing as aforesaid, the said plaintiff never at any time accepted the same, nor agreed to receive it as in compliance with said contract, nor as of the quality prescribed in said contract, and that the same was not, nor was any of it of the quality so prescribed and required in said contract, in that it did not conform to the specifications and requirements in said contract mentioned and described, and that said pipe was not made from soft iron, free from blisters and other imperfections, and sufficiently strong and of a quality such as to stand a working line pressure of one thousand pounds to the square inch when proved and tested in lines, but, on the contrary, was of a weak, imperfect, poor and defective quality, and wholly unable to stand a pressure not in excess of one thousand pounds to the square inch, and was not such pipe, nor was any of it as when subjected to such pressure would prove tight.

That accordingly, after said plaintiff had received said pipe, and after a reasonable opportunity for inspection and testing of the same, and within a reasonable time after its imperfections, insufficiency and defective character had become known to the plaintiff, said plaintiff, heretofore, and prior to beginning this suit, to wit: on the 23d day of May, 1891, at Chicago, in said district, rejected said pipe as not being such pipe as by the terms of said contract the said defendant was bound to deliver to the said plaintiff, and offered to the said defendant to return the same as not being of the quality provided for in said contract.

And that the said defendant, not regarding its said promise and  
14 undertaking, did not nor would it, although often requested so to do, furnish such goods and merchandise as aforesaid, as required by said contract, but wholly neglected and refused so to do, and therein made default, and said defendant then and there so negligently and improperly conducted and behaved in and about the furnishing of said goods, wares and merchandise, that the same were by reason thereof not of the quality and character provided for in said contract, and thereby the plaintiff not only lost all benefit, profit and advantage which it might and could have derived and acquired from the purchase of the said goods and merchandise, but was also put to great expense of its monies, to wit: the sum of two hundred thousand dollars in and



about the shipping, handling and laying of said pipe, and also lost other monies, to wit: the sum of six hundred thousand dollars which was paid by it to the said defendant as and for the purchase price of the said goods and merchandise, and also sustained great loss and damage on occasion of its not being able to use the same at the county of Cook aforesaid, whereby the said plaintiff having employed large numbers of men and secured teams, wagons, tools and machinery to lay said pipe for use was greatly delayed, damaged, and hindered in the prosecuting of said work by the failure of said defendant to comply with its contract in promptly delivering said pipe, and thereby sustained further damage and loss, to wit: in the sum of \$200,000 at Chicago, in said district, and has been and is by reason of the premises otherwise greatly injured and damaged, to wit: at Chicago, in said district.

By reason whereof the said defendant became liable to pay to the said plaintiff the said several sums of money so due to the said plaintiff by reason of the failure of the said defendant to keep and perform its said contract and agreement with the said plaintiff, as aforesaid, and being so liable the said defendant in consideration thereof, afterwards, to wit: on the twenty-second day of May, in the year 1891, at Chicago, to wit: in said district, undertook and then and there faithfully promised the said plaintiff the said several sums of money so due to said plaintiff by reason of the premises as aforesaid.

And for that whereas, also, heretofore, to wit: on the 28th day of June, in the year 1890, the said defendant then and there to wit: at the city of Chicago, in said district, agreed to buy as the agent of this plaintiff, and to deliver to said plaintiff, and in consideration of the facilities and representations of the defendant made to said plaintiff as in said contract alleged, which contract with the papers referring to the subject-matter thereof, and attached hereto are hereby made a part hereof, said plaintiff agreed to receive  
15 of the defendant and pay defendant for wrought iron standard line pipe, as follows, that is to say:

Two hundred and sixty miles of eight-inch wrought iron standard line pipe to weigh not less than 27.48 pounds per lineal foot. Ten to twenty miles of ten-inch wrought iron standard line pipe to weigh not less than thirty-nine pounds per lineal foot exclusive of weight of collar. Ten to twenty miles of six-inch wrought iron standard line pipe to weigh not less than 18.29 pounds per lineal foot exclusive of weight of collar. Ten to twenty miles of four-inch wrought iron standard line pipe to weigh not less than 10.39 pounds per lineal foot exclusive of weight of collar. Ten to twenty miles of three-inch wrought iron standard line pipe, to weigh not less than 7.35 pounds per lineal foot exclusive of weight of collar.

Six thousand feet of five five-eighths wrought iron standard casing, and that the price to be paid therefor as aforesaid, should not be more than ninety-one cents per lineal foot for said eight-inch pipe, the price on the other sizes of said pipe to be in proportion to that price, to be thereafter agreed upon between the parties. Which said price of ninety-one cents should include as a part thereof, two and one-half per cent. as a commission or compensation to be paid to said defendant, which said pipe the said defendant agreed, unless prevented by strikes and causes beyond its control, to deliver or to secure the delivery thereof to the plaintiff, during the months of July, August and September, at such places as should be thereafter designated by the plaintiff, and not later than October 1, 1890, and to deliver all the eight-inch pipe aforesaid, unless so prevented as aforesaid, so that thirty-seven miles thereof should be delivered in July, not less than one hundred and twenty-three miles in August, and the remainder thereof undelivered, in September, 1890, and prior to the fifteenth day of that month if possible.

For which said iron pipe so to be delivered as aforesaid, the said plaintiff agreed to pay the stipulated price in cash.

And that in and by said agreement so made as aforesaid, it was provided that all of said pipe should be in conformity with certain specifications and certain conditions and tests, as to quality, for eight-inch pipe as in said contract was specified, which said specifications were as was said contract in writing, and were attached thereto as Exhibit "B," and that it was provided in and by said specifications among other things, that the said eight-inch standard line pipe should be delivered to the plaintiff, and should be made from soft iron, free from blisters and other imperfections, and guaranteed to stand a working line pressure of one thousand pounds to the square inch so proved and tested in lines, when tested by said plaintiff under said working pressure, which said working tests should be made with reasonable promptness.

16 And that also said pipe should not be considered as accepted by said plaintiff by reason of any payments made therefor, so as to relieve the said defendant from liability, on account of its defective character, until the whole should have been laid and tested in line and approved.

And that heretofore, and after the date of said agreement as aforesaid, to wit: on the first day of July, in the year 1890, at Chicago, in said district, the said defendant company furnished to the plaintiff a statement showing the prices at which said defendant would deliver to the said plaintiff the said pipe so agreed to be bought and delivered as aforesaid, and that the prices so fixed as aforesaid were sixty miles of eight-inch pipe manufactured by the



filed  
1890.

Paige Tube Company at eighty-eight and six-tenths cents per foot, sixty miles of said eight-inch pipe manufactured by the National Tube Works Company at eighty-eight and five-tenths cents per foot, forty miles of said eight-inch pipe manufactured by the Pittsburgh Tube Company at eighty-eight and five-tenths per foot, forty miles of said eight-inch pipe manufactured by the Reading Iron Company at eighty-eight cents per foot, twenty miles of said eight-inch pipe manufactured by Morris, Tasker & Company at eighty-eight cents per foot, twenty miles of said eight-inch pipe manufactured by Spang, Chalfant & Company at eighty-eight cents per foot, twenty miles of said eight-inch pipe manufactured by the said American Tube and Iron Company at eighty-eight cents per foot, and also ten miles of three-inch pipe at about twenty-two cents per foot, ten miles of four-inch pipe at about thirty cents per foot, ten miles of six-inch pipe at about fifty-five cents per foot, and ten miles of ten-inch pipe at one dollar and thirty cents per foot, to which the defendant added the said percentage of two and one-half per cent. hereinbefore mentioned and referred to.

And that thereafter and on various days and dates between the date of said contract and the twenty-fourth day of September, 1890, the said plaintiff named to the said defendant points for the delivery of said pipe, and that from the 21st of August, 1890, to November 3, 1890, the said defendant delivered to the said plaintiff 95.14 miles of eight-inch pipe purporting to be of such character and quality as was called for by the said contract, and which the said defendant was bound to deliver to the said plaintiff and at various times, to wit: between the sixth day of September and the twenty-fourth day of September, 1890, the said defendant did accordingly deliver to said plaintiff 10.11 miles of ten-inch pipe, which purported to be of the character which it had by the said contract agreed to deliver to said plaintiff, and at various dates, to wit: from the 25th of August to the 15th of October, 1890, delivered to said plaintiff 1.94 miles of six-inch pipe which purported to be of the character and quality which by the said contract the said defendant was bound to deliver to the said plaintiff, and at various dates, 17 to wit: from the 25th of August to November 3, 1890, the said defendant delivered to the said plaintiff 3.54 miles of four-inch pipe which purported to be of the character and quality which by the contract, as aforesaid, the said defendant was bound to deliver to the said plaintiff, and that at various dates, to wit: between the 15th of August and the 18th of August, 1890, the said defendant delivered to the said plaintiff 10.24 miles of three-inch pipe which purported to be of the character and quality which by the said contract said defendant was bound to deliver to said plaintiff.

All of which was caused to be so shipped by the said defendant

to said plaintiff as in compliance with and execution on its part of its said contract in this regard.

That all of said pipe was not delivered within the times limited by the contract for the delivery thereof, nor was the same promptly delivered upon orders of the said plaintiff to the said defendant therefor. That said defendant at various dates, to wit: from August 23 to August 28, 1890, delivered to said plaintiff as in compliance with its said contract 6,000 feet of five and five-eighths-inch casing.

And that heretofore, to wit: on the 15th day of September, 1890, the said plaintiff notified the defendant that it would require the delivery of all pipe contracted for prior to October 1, 1890. And that after the delivery of said pipe, including said casing, as aforesaid, the said plaintiff never at any time accepted the same, nor agreed to receive it as in compliance with said contract, nor as of the quality prescribed in said contract, and that the same was not nor was any of it of the quality so prescribed and required in said contract, in that it did not conform to the specifications and requirements in said contract mentioned and described, and that said pipe was not made from soft iron free from blisters and other imperfections and sufficiently strong and of a quality such as to stand a working line pressure of one thousand pounds to the square inch when proved and tested in line.

But on the contrary was of a weak, imperfect, poor and defective quality and wholly unable to stand pressure not in excess of one thousand pounds to the square inch, and was not such pipe nor was any of it as when subjected to such pressure so in line would prove tight.

And that the said defendant not regarding its said promise and undertaking did not nor would it, although often requested so to do, furnish such goods and merchandise as aforesaid as required by said contract, but wholly neglected and refused so to do and therein made default, and said defendant then and there so negligently and improperly conducted and behaved in and about the furnishing of said goods, wares and merchandise that the same were by reason thereof not of the quality and character provided for in said contract but were 18 wholly unfit for the purpose of the said contract and were of little or no value, and thereby the plaintiff not only lost all benefit, profit and advantage which it might and could have derived and acquired from the purchase of the said goods and merchandise but was also put to great expense of its moneys, to wit: the sum of two hundred thousand dollars in and about the shipping, handling and laying of said pipe, and also lost other moneys, to wit: the sum of six hundred thousand dollars, which was paid by it to the said defendant as and for the purchase price of the said goods and

merchandise, and also sustained great loss and damage on occasion of its not being able to use the same at the county of Cook aforesaid, whereby the said plaintiff having employed large numbers of men, and secured teams, wagons, tools and machinery to lay said pipe for use, was greatly delayed, damaged and hindered in the prosecuting of said work by the said failure of said defendant to comply with its contract in promptly delivering said pipe, and thereby sustained further damage and loss, to wit: in the sum of two hundred thousand dollars at Chicago, in said district, and has been and is by reason of the premises otherwise greatly injured and damaged, to wit: at Chicago, in said district.

By reason whereof, the said defendant became liable to pay to the said plaintiff the said several sums of money so due to the said plaintiff by reason of the failure of the said defendant to keep and perform its said contract and agreement with the said plaintiff, as aforesaid, and being so liable the said defendant in consideration thereof, afterwards, to wit: on the twenty-second day of May, in the year 1891, at Chicago, to wit: in said district, undertook and then and there faithfully promised the said plaintiff well and truly to pay unto the said plaintiff the said several sums of money so due to said plaintiff by reason of the premises as aforesaid.

And for that whereas, also, the said defendant heretofore, to wit: on the twenty-second day of May, in the year of our Lord one thousand eight hundred and ninety-one, at Chicago, to wit: at the district aforesaid, became and was indebted to the said plaintiff in the sum of one million dollars of lawful money of the United States of America, for divers goods, wares and merchandise, by the said plaintiff before that time sold and delivered to the said defendant, and at the special instance and request of the said defendant, and being so indebted to the said plaintiff the said defendant in consideration thereof afterwards, to wit: on the same day and year and at the place aforesaid, undertook and then and there faithfully promised the said plaintiff well and truly to pay unto the said plaintiff the sum of money last mentioned when the said defendant should be thereunto afterwards requested.

19 And whereas, also, the said defendant afterwards, to wit: on the same day and year and at the place aforesaid, in consideration that the said plaintiff had before that time at the like special instance and request of the said defendant, sold and delivered to the said defendant divers other goods, wares and merchandise of the said plaintiff, the said defendant then and there undertook and faithfully promised the said plaintiff that the said defendant would well and truly pay to the said plaintiff so much money as the last aforesaid goods, wares and merchandise at the time of the sale and delivery thereof were reasonably worth when the said defend-

ant should be thereunto afterwards requested, and the said plaintiff avers that the said goods, wares and merchandise last mentioned at the time of the sale and delivery thereof, were reasonably worth the further sum of one million dollars of like lawful money as aforesaid, to wit: at the place aforesaid, whereof the said defendant afterwards on the same day and year and at the place aforesaid had notice.

And whereas, also, the said defendant, afterwards, to wit: on the same day and year last aforesaid, was indebted to the said plaintiff in the further sum of one million dollars of like lawful money as aforesaid, for money before that time lent and advanced by the said plaintiff to the said defendant and at the like request of the said defendant.

And in the like sum for other money by the said plaintiff before that time paid, laid out and expended for the said defendant and at the like request of the said defendant. And in the like sum for other money by the said defendant before that time had and received to and for the use of the said plaintiff. And in like sum for other money before that time and then due and owing the said plaintiff for interest upon and for the forbearance of divers other sums of money before that time and then due and owing from said defendant to said plaintiff. And in the like sum for the price and value of work then done and material for the same provided by the said plaintiff for the said defendant, and at the like special request of the said defendant. And being so indebted the said defendant in consideration thereof, afterwards, to wit: on the same day and year and at the place aforesaid, undertook and then and there faithfully promised the said plaintiff well and truly to pay unto the said plaintiff the several sums of money in this count mentioned when the said defendant should be thereunto afterwards requested.

And whereas, also, the said defendant afterwards, to wit: on the same day and year and at the place aforesaid, accounted together with the said plaintiff of and concerning divers other sums of money before that time due and owing from the said defendant to the said plaintiff, and then and there being in arrear and unpaid, and upon such accounting the said defendant then and there  
20 was found to be in arrear and indebted to the said plaintiff in the further sum of one million dollars of like lawful money as aforesaid. And being so found in arrear and indebted to the said plaintiff, the said defendant in consideration thereof afterwards, to wit: on the same day and year, and at the place aforesaid, undertook and then and there faithfully promised the said plaintiff well and truly to pay unto the said plaintiff the sum of money last mentioned, when the said defendant should be thereunto afterwards requested.

Nevertheless, the said defendant, although often requested, etc., hath not yet paid the said several sums of money above mentioned, or any or either of them, or any part thereof to the said plaintiff, but to pay the same or any part thereof to the said plaintiff the said defendant hath hitherto altogether refused, and still doth refuse to the damage of the said plaintiff of \$1,000,000, and therefore the said plaintiff brings suit, etc.

GREGORY, BOOTH & HARLAN,  
*Plaintiff's Attorneys.*

#### COPY OF INSTRUMENT AND ACCOUNT SUED ON.

*Crane Co. :*

*To COLUMBUS CONSTRUCTION CO. Dr.*

To goods, wares and merchandise sold and delivered...	\$1,000,000
To money lent and advanced.....	1,000,000
To money paid, laid out and expended.....	1,000,000
To money had and received to and for the use of said plaintiff.....	1,000,000
To money due for interest and forebearance.....	1,000,000
To labor, services and material.....	1,000,000
To balance due on account stated.....	1,000,000

#### COPY OF AGREEMENT SUED ON.

This agreement made this twenty-eighth day of June, A. D. 1890, between the Columbus Construction Company, a corporation existing under and by virtue of the laws of the State of New Jersey, party of the first part; and the Crane Company, a corporation existing under and by virtue of the laws of the State of Illinois, party of the second part.

WITNESSETH, That for and in consideration of the facilities and representations of the party of the second part, more fully shown by "Exhibit A," hereto attached, and made a part hereof, to effect for the party of the first part upon desirable terms the purchase of the standard wrought iron pipe line hereinafter specified, and the sum of one dollar in hand paid by each of the parties hereto the one to the other, the receipt whereof is hereby mutually acknowledged, it is agreed between the parties hereto as follows, to wit:

The party of the second part will purchase in its own name and upon its own credit as the agent irrevocable of the party of the first part, and secure the delivery to the party of the first part during the months of July, August and September as hereinafter speci-

fied at such places as may be designated hereafter by the party of the first part, at the earliest practical dates, but not later than October 1, 1890, barring strikes and causes beyond control for the lowest obtainable price (which price shall include freights to the points of delivery, same not to exceed the current rate of freight from point of shipment to Chicago) and the party of the first part will take all wrought iron standard line pipe hereinafter specified in conformity with the specifications and subject the conditions and tests more fully set forth, and specified in the contract and specifications for standard 8-inch line pipe hereunto attached (subject, however, to change as to size and weight as hereinafter stated) marked "Exhibit B," hereunto attached and made a part hereof, at a price including commissions to be paid party of the second part of two and one-half (2 1-2) per cent. not exceeding ninety-one (91) cents per lineal foot for eight (8) inch standard line pipe, and price on the following sizes to be in proportion to price given on eight-inch as above and as hereinafter specified.

cents per lineal foot for ten-inch standard line pipe.

cents per lineal foot for six-inch standard line pipe.

cents per lineal foot for four-inch standard line pipe.

cents per lineal foot for three-inch standard line pipe.

cents per lineal foot for 5 5-8-inch standard casing.

260 miles of eight-inch wrought iron standard line pipe to weigh not less than 27.48 pounds per lineal foot.

10 to 20 miles of 10-inch wrought iron standard line pipe, to weigh not less than 39 pounds per lineal foot exclusive of weight of collar.

10 to 20 miles of 6-inch wrought iron standard line pipe, to weigh not less than 18.29 pounds per lineal foot exclusive of weight of collar.

10 to 20 miles of 4-inch wrought iron standard line pipe, to weigh not less than 10.39 pounds per lineal foot exclusive of weight of collar.

10 to 20 miles of 3-inch wrought iron standard line pipe, to weigh not less than 7.35 pounds per lineal foot exclusive of weight of collar.

22 6,000 feet of 5 5-8-wrought iron standard casing.

It being the intent and purpose hereof that the party of the first part shall have the right during the running of this agreement to take so much of the ten, six, four and three-inch pipe over and above the ten miles hereinafter specified (but in amount not exceeding twenty miles of each size specified, eight-inch excepted), as it may hereafter designate.

The party of the second part will, barring strikes and causes beyond their control, deliver all the eight-inch pipe before men-

ment tioned, in amount not less than thirty-seven miles, in July, not less than 123 miles in August, and all the remaining undelivered in September, 1890, prior to the 15th of September, if possible.

The party of the first part agrees to pay to the party of the second part upon the delivery of each and every invoice of pipe at such delivery points as the party of the first part shall designate, spot cash therefor, including commission of two and one half ( $2\frac{1}{2}$ ) per cent. over and above the amount of each original invoice rendered party of the second part by the manufacturer, but in no case agreeing to pay any sum or sums in excess of (including pipe freight and commission or other charges) the prices hereinbefore fixed for each size of pipe.

In witness whereof the parties hereto have caused this instrument to be executed in duplicate by their respective presidents, and attested by their respective secretaries, under their respective corporate seals, this 30th day of June, 1890.

COLUMBUS CONSTRUCTION COMPANY,

By C. E. HEQUEMBOURG, *President*.

Attest: C. K. WOOSTER,

*Secretary of Columbus Construction Company.*

CRANE COMPANY,

R. T. CRANE, *President*.

Attest: GEO. L. FORMAN,

*Secretary of the Crane Company.*

[SEAL.]

NEW YORK, June, 1890.

The within contract is hereby approved by the subscribers, the holders of a majority of all the stock of the Columbus Construction Company outstanding at this date, pursuant to section 1, article 2, of the by-laws of the Columbus Construction Company.

E. BENEDICT.

CHICAGO, June 20, 1890.

C. E. Hequembourg, *Esq.*

DEAR SIR: As members of the Pipe Association, with a representative on the Board of Managers, we feel confident of our ability, in fact know that we can, purchase the pipe in question at least five per cent. less than any outsider.

Especially is this true in the face of the legislation enacted by the Board of Managers at a meeting held in Pittsburg on Wednesday, the 18th inst., at which meeting it was agreed that cash forfeits of large amounts be put up, the same to be forfeited in the event of the agreed price being cut.

It will be necessary for the Board of Managers to take special



legislation in effect, to throw the market open in the interest of our Company to enable us to secure the material wanted at a price satisfactory to you, and acting merely as your agent the price made us would naturally be yours. Lett

Our position in the Association is such that we feel confident of bringing this about.

Should you have sufficient confidence in our Company to appoint us your agents in this matter, the actual placing of the order in itself, quite a task to our minds, would only be the beginning of a large line of work that we would be necessarily called upon to do for you in the handling of a dozen mills more or less, that would have to participate in the completion of such an order. In consequence of which, we think, in tendering our services to you as we do, that 2½ per cent. brokerage would only be a reasonable charge.

Should you decide to accept our offer your wishes will be our instructions.

Very respectfully yours,

(Signed) CRANE COMPANY,  
GEO. L. FORMAN, *Secretary*.

24

## "EXHIBIT B."

Exh  
De  
A

This agreement made and entered into the..... of  
.....by and between.....party  
of the first part and the.....party of the second  
part,

WITNESSETH, That the said party of the second, for and in consideration of one dollar to it in hand well and truly paid by the party of the second part at and before the sealing and delivery hereof, the receipt of which is hereby acknowledged, and of the payments hereinafter mentioned to be made by the said party of the second part, has covenanted and agreed and by these presents does covenant and agree,

*First.* To furnish and deliver to the said party of the second part... miles of eight-inch standard nominal weight line pipe, made from soft iron, free from blisters and other imperfections, and guaranteed to stand a working line pressure of one thousand pounds to the square inch when proved and tested in lines, as hereinafter provided.

*Second.* This pipe shall be eight-inch standard line pipe, and no single joint of the said pipe shall weigh less than 27.48 pounds to the lineal foot.

*Third.* That no more than five (5) spliced joints shall be included in any one car load, and that each sliced joint shall weigh



the weight of the collar in addition to the weight herein contracted for.

*Fourth.* That each joint of pipe furnished under this contract shall have eight threads to the inch, and at least two inches of thread on each end, and that full, uniform taper shall be given to the threads both on the pipe and in the collar.

*Fifth.* That it will not commence later than . . . . . and will on said day and on each working day thereafter, deliver to the Railway Company for transportation, to the party of the second part at railway stations in . . . . . at least an average of . . . . . miles of pipe, until the whole amount of pipe herein contracted for is delivered, which shall not be later than . . . . ., barring strikes and causes beyond our control.

*Sixth.* That it will pay all freight and other charges for transportation of said pipe from its mills to destination, as above.

*Seventh.* That it will pay to the party of the second part all  
25 damages and expenses of every kind which second party shall sustain by reason of any defect or defects in the pipe delivered, up to and including the time when said pipe is tested by second party under working pressure not in excess of one thousand (1,000) pounds to the square inch, and proved tight in the line, which working test shall be made with reasonable promptness, and,

*Eighth.* That it will pay the party of the second part as liquidation damages the sum of fifty (50) dollars per day, for each and every day after said . . . . ., and until the amount of pipe agreed to be furnished, as above provided, has been furnished, and second party may deduct the amount of such damages from any money in its hands due first party for pipe furnished under this contract.

In consideration of the premises, the said party of the second part covenants and agrees to pay to the party of the first part the sum of . . . . . per foot for each and every foot of pipe received by it under this contract, said payments to be made on each car load of pipe within fifteen days after the receipt of the same, unless counterbalanced by damages due to second party.

It is expressly understood and agreed by and between the parties hereto, that the representative of second party, at first party's mill is there only for the purpose of seeing that the said pipe comes up to the guaranteed weight, and that the treads and sockets are not manifestly defective, and said pipe shall not be construed to be accepted by second party by reason of any payments made therefor, so as to relieve first party from liability on account of its defective character until the same has been laid and tested in the line and proved.

IN WITNESS WHEREOF, the parties to this agreement have hereunto set their hands and seals the day and year above written.

## BILL OF PARTICULARS.

## CRANE COMPANY

In account with COLUMBUS CONSTRUCTION COMPANY.

To paid for pipe.

1890.	Aug. 25	.....	\$40,000
	" 28	.....	20,000
	" 29	.....	20,000
	Sept. 1	.....	20,000
	" 3	.....	20,000
	" 8	.....	40,000
26	" 11	.....	20,000
	" 15	.....	20,000
	" 16	.....	20,000
	" 18	.....	20,000
	" 20	.....	20,000
	" 22	.....	20,000
	" 24	.....	20,000
	" 26	.....	20,000
	" 29	.....	20,000
	Oct. 2	.....	20,000
	" 4	.....	20,000
	" 10	.....	20,000
	" 18	.....	40,000
	" 31	.....	30,000
	Nov. 25	.....	15,000
	Freight paid for Crane Company...		945.28

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 \$485,945.28

Moneys paid out for laying pipe 19.35 miles.....	24,947.67
Moneys paid out for placing pipe on right of way 41 miles.....	5,173.79
Loss and damage sustained by failure to deliver pipes at times agreed.....	200,000.00

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 \$716,066.74

(Endorsed.)

Filed this 26th day of June, 1891.

WM. H. BRADLEY, *Clerk.*

27 Afterwards to wit: on the seventh day of July, 1891, came the defendant by its attorneys and filed in the clerk's office of said court its general demurrer, which said General Demurrer is in the words and figures following to wit:

GENERAL DEMURRER.

UNITED STATES OF AMERICA, }  
NORTHERN DISTRICT OF ILLINOIS. } ss.

IN THE CIRCUIT COURT OF THE UNITED STATES, FOR THE NORTHERN DISTRICT OF ILLINOIS.

Columbus Construction Company }  
vs. }  
Crane Company. }

And the defendant, by Williams, Holt & Wheeler, comes and defends, etc., when, etc., and says that the said declaration and each and every separate count thereof and the matters therein contained in manner and form as the same are above set forth are not sufficient in law for the plaintiff to maintain its aforesaid action, and that it, the defendant, is not bound by law to answer the same, and this it is ready to verify, wherefore, for want of a sufficient declaration in this behalf the defendant prays judgment and that the plaintiff may be debarred from maintaining its aforesaid action, etc.

WILLIAMS HOLT & WHEELER,  
*Defendant's Attys.*

(Endorsed): Filed July 7, 1891. WM. H. BRADLEY, *Clerk.*

Afterwards, to wit: on the second day of November, in the October adjourned term of said court, 1891, in the record of proceedings thereof, in said entitled cause, before the Hon. Henry W. Blodgett, District Judge, appears the following entry to wit:

28 The Columbus Construction Company }  
22,015. vs. }  
Crane Company. }

Now come the parties, by their attorneys, and on motion of the plaintiff, by its attorney, leave is given it to amend the second and fourth counts of the declaration herein, which is now done, and now comes on to be heard the demurrer of the defendant to said declaration and each count thereof, and after hearing the arguments of the counsel the court takes the same under advisement.

Afterwards, to wit: on the ninth day of November, in the adjourned October term of said court, 1891, in the record of proceedings thereof before the Hon. Henry W. Blodgett, District Judge, appears the following entry, to wit:

Order  
Dem  
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9, 18

The Crane Construction Company }  
v.s.  
Crane Company. }

Now come the parties, by their attorneys, and the court having considered and being now fully advised upon the demurrer of the defendant to the declaration herein, overrules said demurrer to all the counts of said declaration, except the third and fourth special counts, and sustains said demurrer to said third and fourth special counts.

And afterwards, to wit: on the 23d day of November, of the adjourned October term, A. D. 1891, of said court, in the record of the proceedings thereof in said above entitled cause, before the Honorable Henry W. Blodgett, District Judge, appears the following entry, to wit:

Order  
orde  
1891  
Det  
dis

## ENTRY.

Columbus Construction Company }  
22,015. v.s.  
The Columbus Company. } *Assumpsit.*

Now come the parties, by their respective attorneys, and it is ordered that the order entered herein, on the ninth instant, overruling the defendant's demurrer as to all the counts of the declaration filed herein, except the third and fourth special counts, and sustaining said demurrer to said third and fourth special counts be set aside and vacated. And on motion of the plaintiff, by its attorney, it is ordered that the common counts and the first and second special counts of said declaration be and they are hereby dismissed, and on motion of the defendant, by its attorney, leave is given it to file an amended demurrer to said third and fourth special counts, which is now filed, and the court, having considered and being now fully advised upon said amended demurrer, sustains the same, and orders that this cause be dismissed at the cost of the plaintiff.

It is thereupon considered and adjudged by the court that said defendant do have and recover of said plaintiff its costs in this behalf to be taxed, and that execution issue therefor. On the same day, to wit: on the twenty-third day of November, 1891, came the defendant in said entitled cause, by its attorneys, and filed in the clerk's office of said court its Demurrer to Amended Declaration, which said demurrer is in the words and figures following, to wit:

Judgm  
Nov

30

## DEMURRER TO AMENDED DECLARATION.

IN THE CIRCUIT COURT OF THE UNITED STATES, FOR THE  
NORTHERN DISTRICT OF ILLINOIS.

Columbus Construction Company }  
*vs.*  
 Crane Company. }

And the defendant, by Williams, Holt & Wheeler, its attorneys, comes and defends the wrong and injury, when, etc., and says that the said declaration and each count thereof, and the matters therein contained in manner and form as the same are above set forth, are not sufficient in law for the plaintiff to maintain its aforesaid action, and that it, the defendant, is not by law bound to answer the same, and this it is ready to verify. Wherefore for want of sufficient declaration in this behalf, the defendant prays judgment that the plaintiff may be debarred from maintaining its aforesaid action, etc. And for causes of demurrer, the defendant shows that the plaintiff hath not in and by its said declaration alleged or set forth wherein and in what respects the defendant was guilty of the negligence in said declaration imputed to it.

And that said declaration and each count thereof is in other respects defective, informal and insufficient in law.

WILLIAMS, HOLT & WHEELER,  
*Defts'. Attys.*

(Endorsed): Filed Nov. 23, 1891.  
 WM. H. BRADLEY, *Clerk.*

And afterwards, to wit: on the 26th day of October of the adjourned October term, A. D. 1892, of said court in the record of the proceedings thereof in said above entitled cause, before the Honorable Walter Q. Gresham, Circuit Judge, appears the following entry, to wit:

31

## ENTRY.

Columbus Construction Company }  
*vs.*  
 The Crane Company. } 22,015.

Now comes the plaintiff by its attorney, moves the court for leave to file the mandate of the United States Circuit Court of Appeals for the Seventh Circuit, which is allowed, and this cause is or-

dered to be redocketed. And the court in accordance with said mandate overrules the defendant's demurrer to the declaration herein and the defendant is ruled to plead thereto within twenty days from the date hereof.

Afterwards, to wit: on the sixth day of April, 1893, there was filed in the clerk's office of said court the following stipulation:

STIPULATION.

UNITED STATES CIRCUIT COURT, IN AND FOR THE NORTHERN DISTRICT OF ILLINOIS.

Columbus Construction Company	}	21,015, <i>Assumpsit.</i>
<i>vs.</i>		
Crane Company.		

It is hereby stipulated and agreed that the appearance of Messrs. Gregory, Booth and Harlan, as attorneys for the plaintiff herein may be withdrawn, and that the appearance of Messrs. Campbell and Custer may be entered as attorneys for said plaintiff.

GREGORY, BOOTH & HARLAN,  
*Attorneys for Plaintiff.*

WILLIAMS, HOLT & WHEELER,  
*Attorneys for Defendant.*

We hereby enter our appearance for the plaintiff in the above cause.

CAMPBELL & CUSTER,  
*Attys. for Plaintiff,*

(Endorsed.) Filed April 6, 1893. S. W. BURNHAM, *Clerk.*

32 Afterwards, to wit: on the seventh day of April, in the adjourned March term of said court, 1893, in the record of proceedings thereof in said entitled cause before the Hon. Peter S. Grosscup, District Judge, appears the following entry, to wit:

Columbus Construction Company	}
<i>vs.</i>	
Crane Company.	

Upon the stipulation herein filed, it is ordered that the appearance of Gregory, Booth and Harlan for the plaintiff herein be withdrawn, and that the appearance of Campbell & Custer, attorneys, be substituted therefor.

16. Afterwards, to wit: on the sixteenth day of June, 1893, came the defendant in said entitled cause by its attorneys and filed in the clerk's office of said court its plea with notice of set-off, which said plea, etc., is in the words and figures following, to wit:

## PLEA.

IN THE CIRCUIT COURT OF THE UNITED STATES, FOR THE NORTH-  
ERN DISTRICT OF ILLINOIS.

Columbus Construction Company }  
  *vs.*  
Crane Company. }

And the defendant, by Williams, Holt & Wheeler, its attorneys, comes and defends the wrong and injury, when, etc., and says that it did not undertake or promise in manner and form as the plaintiff hath thereof in its said declaration above complained against the defendant. And of this the defendant puts itself upon the country.

The plaintiff will take notice that on the trial of this cause, the defendant under its foregoing plea of the general issue will prove and rely upon the following matters in defense of said suit and by way of set-off and counter-claim, to wit:

The defendant says that in accordance with the agreement set forth as an exhibit to said declaration, the defendant did purchase, as the agent of the plaintiff, and contract for the delivery to the plaintiff of all the pipe specified in said agreement at prices not exceeding the prices respectively designated in the said agreement for the respective sizes. That at the time of entering into 33 said agreement it was well known both to the plaintiff and to the defendant and was contemplated by the plaintiff and by the defendant that the said pipe should not be manufactured by the defendant, but should be purchased and procured by it from various pipe manufacturers, and that the form of contract attached as Exhibit "B" to said agreement, and by reference made a part thereof, was intended both by the plaintiff and by the defendant to be a prescribed form employed by the defendant as the agent of the plaintiff in contracting with such manufacturers. That the defendant contracted in its own name, but as the agent for and on behalf of the plaintiff and in the form so prescribed by Exhibit "B," with the following named manufacturers of pipe for the manufacture and delivery under and in pursuance of said agreement of the following quantities of eight-inch line pipe, at prices

below respectively designated, to wit: Page Tube Company, sixty miles of pipe at eighty-eight and six-tenths cents per foot; National Tube Works Company, sixty miles of pipe at eighty-eight and five-tenths cents per foot; Pittsburg Tube Company, forty miles of pipe at eighty-eight and five-tenths cents per foot; Reading Iron Company, forty miles of pipe at eighty-eight cents per foot; Morris, Tasker & Company, twenty miles of pipe at eighty-eight cents per foot; Sprang, Chalfant & Company, twenty miles of pipe at eighty-eight cents per foot; American Tube & Iron Company, twenty miles of pipe at eighty-eight cents per foot, and also ten miles of three-inch pipe at about twenty-two cents per foot, ten miles of four-inch pipe at about thirty cents per foot, ten miles of six-inch pipe at about fifty-five cents per foot, and ten miles of ten-inch pipe at one dollar and ten cents per foot, to which sums the defendant was entitled to add its commission of two and one-half per cent.

That all of said manufacturers with whom the defendant contracted were competent, skillful and responsible manufacturers of pipe, fully able to carry out their said agreements, and to respond in damages for any failure to carry out the same. That the making of each and all of said contracts and agreements by the defendant was duly and promptly reported and made known to the plaintiff during the month of July, 1890, and the plaintiff approved of the same and assented to said contracts, and from time to time thereafter gave directions as to the methods of manufacturing said pipe, and as to the time and manner of shipment thereof. That during the months of July, August and September, 1890, large quantities of pipe manufactured by the respective contracting parties above mentioned were by direction of the plaintiff shipped and delivered to the plaintiff at various points in the states of Illinois and Indiana. That the manufacture and shipment of all the pipe mentioned in said contracts was not completed during said months of July, August and September, by reason of strikes and other causes beyond the control of the defendant, the plaintiff being informed of and consenting to such delays. That during or about the  
 34 month of October, 1890, the plaintiff expressly requested the defendant to cause further manufacture and shipment of the pipe to be deferred until the following spring, which was done accordingly.

That the pipe so delivered to the plaintiff under said agreement was in all respects in conformity with the requirements of said agreement, and of the specifications thereto attached, and was capable of standing, and would have stood, a working test in a line of one thousand pounds to the square inch, if such line had been properly laid, and such test made with reasonable promptness, as



16. provided in said agreement. That the defendant in all respects fully complied with and performed the said agreement on its part, but that the plaintiff failed and refused to comply with its agreement to pay spot cash for said pipe upon delivery, and at all times upon and after October 1, 1890, there was a large balance due from the plaintiff to the defendant in respect to pipe delivered in accordance with said contract amounting to the sum of one hundred and fifty thousand dollars (\$150,000) which the plaintiff wholly refused to pay, and made various inconsistent and untruthful excuses for such failure and refusal. That said plaintiff failed and neglected to properly lay said pipe, and to make suitable tests thereof with reasonable promptness.

That by reason of the failure and refusal of the plaintiff to pay cash for the pipe delivered, as aforesaid, and by reason of the unfounded claims of the plaintiff in respect to the defective quality of said pipe, the defendant was unable to pay the various manufacturers, with whom it had contracted as aforesaid, the amounts due them respectively for pipe delivered, as provided in the contract, and was unable to secure from them the further performance of their respective contracts to manufacturers. That by reason of the inability and failure of the defendant to make such payment, the said manufacturers duly notified the defendant, and the defendant in turn duly notified the plaintiff that said manufacturers had purchase material for the performance of said contracts, which material was useless to them, except for that purpose, and that the same would be sold at the market price, and the loss charged against the defendant, which was done accordingly; and thereby the defendant became and is subject to claim and liability from said manufacturers for special damage to a large amount, to wit: one hundred thousand dollars (\$100,000) by reason of the default of the plaintiff in performance of its said agreement.

Further, that Morris, Tasker & Company, above mentioned, fully performed their agreement for the manufacture of twenty miles of said eight-inch pipe, and said pipe duly delivered to and received by the plaintiff, but by reason of the refusal of the  
35 plaintiff to pay for same, the defendant was compelled to and did withhold the payment of a balance due to said Morris, Tasker & Company, therefor, and thereupon said Morris, Tasker & Company on the 24th day of September, A. D. 1891, commenced suit in this court for the recovery of the balance due them, as aforesaid. Thereupon the defendant formally notified the plaintiff of the commencement of said suit, and called upon the plaintiff to come in and defend the same by showing, if such were the fact, that said pipe was not in conformity with the requirements of the contract aforesaid. That the plaintiff refused to become a party of record

in said suit, and refused upon formal demand to furnish the defendant the names of witnesses by whom said defense could be established: That thereupon the defendant caused subpoenas to be served upon such persons as it could find who might be able to give evidence tending to establish such defense. That thereafter, on the 27th day of April, 1893, said cause came on for trial, the attorney for the said Columbus Construction Company being present in court during all the time of such trial, and that full defense was made by this defendant, and an opportunity given the plaintiff to produce additional witnesses in that behalf. That as the result of said trial said court found and adjudged that said pipe was in all respects conformable to the requirements of said contract, and rendered judgment in favor of said Morris, Tasker & Company against this defendant in the sum of \$8,890.71, being the full amount claimed by Morris, Tasker & Company as the balance due upon said agreement. That this defendant promptly notified the plaintiff of the entry of said judgment, and called upon the plaintiff to perfect and prosecute an appeal therefrom, if it desired further to contest the same. But the plaintiff refused so to do. Wherefore, this defendant insists that as to the pipe furnished by said Morris, Tasker & Company, the finding and judgment of this court, as aforesaid, constitutes an adjudication, which is binding upon the plaintiff, that the pipe furnished by said Morris, Tasker & Company was in all respects in compliance with said agreement. That this defendant, in addition to the balance due to it for pipe and its liability to damages to the manufacturers of the pipe, as aforesaid, delivered as aforesaid, has become liable to damages claimed by said manufacturers for loss of profits upon the unfulfilled portions of their contracts to a large amount, to wit: one hundred thousand dollars (\$100,000), and the defendant has lost and been deprived of its commission of two and one-half per cent. (2½ per cent.) on all the pipe purchased and to be purchased under said agreement, amounting to the sum of one hundred thousand dollars 36 (\$100,000) to the damage of said defendant in the sum of five hundred thousand dollars (\$500,000), which sum it claims in this suit by way of set-off, recoupment and counterclaim.

CRANE COMPANY,

By WILLIAMS, HOLT & WHEELER,  
*Attorneys for Defendant.*

E. WALKER, *Of Counsel.*

(Endorsed): Filed June, 1893.

S. W. BURNHAM, *Clerk.*

Afterwards, to wit: on the sixth day of June, 1894, came the plaintiff, by Campbell and Custer, its attorneys, and filed in the clerk's office of said court its amendment to its declaration, which said amendment to declaration is in the words and figures following, to wit:

AMENDMENT TO DECLARATION.

UNITED STATES OF AMERICA,  
NORTHERN DISTRICT OF ILLINOIS, } SS.  
NORTHERN DIVISION.

IN THE CIRCUIT COURT OF THE UNITED STATES FOR SAID DISTRICT  
AND DIVISION.

Columbus Construction Company }  
vs. } *Assumpsit.*  
Crane Company.

And now comes the said plaintiff, by Campbell & Custer and George Hunt, its attorneys, leave of court having first been had and obtained therefor, and amends its declaration heretofore filed herein by the addition of a new count thereto, in words and figures as follows, to wit:

And for that, whereas, also, heretofore, to wit: on the 28th day of June, in the year 1890, the said defendant then and there, to wit: at the city of Chicago, in said district, agreed to buy as the agent of this plaintiff, and to deliver to said plaintiff, and in consideration of the facilities and representations of the defendant made to said plaintiff, as in said contract alleged, which contract with the papers referring to the subject-matter thereof, and attached to the declaration herein, are hereby made a part hereof, said plaintiff agreed to receive of the defendant and pay the defendant for wrought iron standard line pipe, as follows, that is to say:

Two hundred and sixty miles of eight-inch wrought iron standard line pipe to weigh not less than 27.48 pounds per lineal foot, ten to twenty miles of ten-inch wrought iron standard line pipe to weigh not less than thirty-nine pounds per lineal foot  
37 exclusive of weight of collar. Ten to twenty miles of six-inch wrought iron standard line pipe to weigh not less than 18.29 pounds per lineal foot exclusive of weight of collar. Ten to twenty miles of four-inch wrought iron standard line pipe to weigh not less than 10.39 pounds per lineal foot exclusive of weight of collar. Ten to twenty miles of three-inch wrought iron standard line pipe

to weigh not less than 7.35 pounds per lineal foot exclusive of weight of collar. Six thousand feet of 5 $\frac{5}{8}$  wrought iron standard casing, and that the price to be paid therefor as aforesaid should be not more than ninety-one cents per lineal foot for said eight-inch pipe, the price on the other sizes of said pipe to be in proportion to that price, to be thereafter agreed upon between the parties.

Which said price of ninety-one cents should include as a part thereof two and one-half per cent. as a commission or compensation to be paid to said defendant, which said pipe the said defendant agreed, unless prevented by strikes and causes beyond its control, to deliver or to secure the delivery thereof to the plaintiff during the months of July, August and September, at such places as should be thereafter designated by the plaintiff, and not later than October 1, 1890, and to deliver all the eight-inch pipe aforesaid, unless so prevented as aforesaid, so that thirty-seven miles thereof should be delivered in July, not less than one hundred and twenty-three miles in August, and the remainder thereof undelivered in September, 1890, and prior to the fifteenth day of that month if possible. For which said iron pipe so to be delivered as aforesaid the said plaintiff agreed to pay the stipulated price in cash.

And that in and by said agreement so made as aforesaid, it was provided that all of said pipe should be in conformity with certain specifications, and certain conditions and tests as to quality, for eight-inch pipe as in said contract was specified, which said specifications were as was said contract in writing, and were attached thereto as Exhibit "B," and that it was provided in and by said specifications, among other things, that the said eight-inch standard line pipe should be delivered to the plaintiff, and should be made from soft iron, free from blisters and other imperfections, and guaranteed to stand a working line pressure of one thousand pounds to the square inch so proved and tested in lines, when tested by said plaintiff under said working pressure, which said working tests should be made with reasonable promptness.

And that also said pipe should not be considered as accepted by said plaintiff by reason of any payments made therefor, so as to relieve the said defendant from liability on account of its defective character, until the whole should have been laid and tested in line and approved.

38 And that heretofore, and after the date of said agreement as aforesaid, to wit: on the first day of July, in the year 1890, at Chicago, in said district, the said defendant company furnished to the plaintiff a statement showing the prices at which said defendant would deliver to the said plaintiff the said pipe so agreed to be bought and delivered as aforesaid, and that the prices so fixed, as aforesaid, were sixty miles of eight-inch pipe manufactured by the

de- Page Tube Company at eighty-eight and five-tenths cents per foot; sixty miles of said eight-inch pipe manufactured by the National Tube Works Company at eighty-eight and five-tenths cents per foot; forty miles of said eight-inch pipe manufactured by the Pittsburgh Tube Company at eighty-eight and six-tenths cents per foot; forty miles of said eight-inch pipe manufactured by the Reading Iron Company at eighty-eight cents per foot; twenty miles of said eight-inch pipe manufactured by Morris, Tasker & Company at eighty-eight cents per foot; twenty miles of said eight-inch pipe manufactured by Spang, Chalfant & Company at eighty-eight cents per foot; twenty miles of said eight-inch pipe manufactured by the said American Tube & Iron Company at eighty-eight cents per foot, and also ten miles of three-inch pipe at about twenty-two cents per foot; ten miles of four-inch pipe at about thirty cents per foot; ten miles of six-inch pipe at about fifty-five cents per foot, and ten miles of ten-inch pipe at one dollar and thirty cents per foot, to which the defendant added the said percentage of two and one-half per cent. hereinbefore mentioned and referred to.

And that thereafter and on various days and dates between the date of said contract and the twenty-fourth day of September, 1890, the said plaintiff named to the said defendant points for the delivery of said pipe, and that from the 21st of August, 1890, to November 3, 1890, the said defendant delivered to the said plaintiff 95.14 miles of eight-inch pipe purporting to be of such character and quality as was called for by the said contract, and which the said defendant was bound to deliver to the said plaintiff, and at various times, to wit: between the sixth day of September and the twenty-fourth day of September, 1890, the said defendant did accordingly deliver to said plaintiff 10.11 miles of ten-inch pipe, which purported to be of the character which it had by said contract agreed to deliver to said plaintiff, and at various dates, to wit: from the 25th of August to the 15th of October, 1890, delivered to said plaintiff 1.94 miles of six-inch pipe which purported to be of the character and quality which by said contract the said defendant was bound to deliver to the said plaintiff, and that at various dates, to wit: from the 25th of August to November 3, 1890, the said defendant delivered to the said plaintiff 3.54 miles of four-inch pipe

39 which purported to be of the character and quality which by the contract as aforesaid the said defendant was bound to deliver to the said plaintiff, and that at various dates, to wit: between the 15th of August and the 18th of August, 1890, the said defendant delivered to the said plaintiff 10.24 miles of three-inch pipe which purported to be of the character and quality which by the said contract said defendant was bound to deliver to said plaintiff.

All of which was caused to be so shipped by the said defendant to said plaintiff as in compliance with and execution on its part of its said contract in this regard.

That all of said pipe was not delivered within the times limited by the contract for the delivery thereof, nor was the same promptly delivered upon orders of the said plaintiff to the said defendant therefor. That said defendant at various dates, to wit: from August 23d to August 28th, 1890, delivered to said plaintiff, as in compliance with its said contract, 6,000 feet of five and five-eighths inch casing.

And that heretofore, to wit: on the 15th day of September, 1890, the said plaintiff notified the defendant that it would require the delivery of all pipe contracted for prior to October 1, 1890. And that after the delivery of said pipe, including said casing, as aforesaid, the said plaintiff never at any time accepted the same, nor agreed to receive it as in compliance with said contract, nor as of the quality prescribed in said contract, and that the same was not, nor was any of it, of the quality so prescribed and required in said contract, in that it did not conform to the specifications and requirements in said contract mentioned and described, and that said pipe was not made from soft iron free from blisters and other imperfections, and sufficiently strong and of a quality such as to stand a working line pressure of one thousand pounds to the square inch when proved and tested in line, but on the contrary, was of a weak, imperfect, poor and defective quality, and wholly unable to stand a pressure not in excess of one thousand pounds to the square inch, and was not such pipe, nor was any of it, as when subjected to such pressure so in line would prove tight.

And that the said defendant, not regarding its said promise and undertaking, did not nor would it, although often requested so to do, furnish such goods and merchandise as aforesaid, as required by said contract, but wholly neglected and refused so to do, and therein made default, and said defendant then and there so negligently and improperly conducted and behaved in and about the furnishing of said goods, wares and merchandise, that the same were by reason thereof not of the quality or character provided for in said contract, but were largely unfit for the purpose of said contract, and were of little value, and the plaintiff says that by reason thereof it was compelled to and  
40 did necessarily expend a large sum of money in and about the purchase of other goods, wares and merchandise to supply the place of the insufficient and defective goods, wares and merchandise so furnished as aforesaid, amounting to to wit, the sum of two hundred thousand dollars over and above the said contract price of the said defective and insufficient goods, wares and merchandise so

de- furnished as aforesaid by the defendant, and also necessarily laid out and expended a large sum of money to wit, two hundred thousand dollars in and about the taking up of such defective and insufficient pipe so furnished as aforesaid, as had been laid in line in the ground by the plaintiff while confiding in the promise of the defendant that said pipe was of the quality and character provided for in said contract and in and about unscrewing the same and taking the defective and insufficient collars therefrom and replacing such collars with other and sufficient collars and again laying said pipe, and in and about the rethreading and repairing of such portions of said defective and insufficient pipe as it was necessary to rethread and repair in order to make it in those respects of the kind and character provided for in said contract, and in and about the taking the defective and insufficient collars from the other of said insufficient and defective pipe furnished as aforesaid, which had not been laid in line, and replacing said collars with other and insufficient collars, and in and about the loading and hauling to and from the thread mills of such portions of said defective and insufficient pipe as it was necessary to rethread and repair for the purpose aforesaid, all of which sums of money the plaintiff says were necessarily and reasonably expended in order that the pipe when laid would stand the tests and fulfill the requirements hereinbefore and in said contract set forth, and also sustained great loss and damage on occasion of its not being able to use the same at the County of Cook aforesaid, whereby the said plaintiff, having employed large numbers of men and secured teams, wagons, tools and machinery to lay said pipe for use, was greatly delayed, damaged and hindered in the prosecuting of said work by the said failure of said defendant to comply with its contract in promptly delivering said pipe, and thereby sustained further damage and loss to wit, in the sum of two hundred thousand dollars at Chicago, in said district and has been and is by reason of the premises otherwise greatly injured and damaged to wit, at Chicago, in said district.

By reason whereof, the said defendant became liable to pay to the said plaintiff, the said several sums of money so due to the said plaintiff by reason of the failure of the said defendant to keep and perform its said contract and agreement with the said plaintiff as aforesaid, and being so liable the said defendant in consideration thereof, afterwards, to wit, on the twenty-second day of May, 41 in the year 1891, at Chicago, to wit : in said district, undertook and then and there faithfully promised the said plaintiff well and truly to pay unto the said plaintiff the said several sums of money so due to said plaintiff by reason of the premises as aforesaid.

CAMPBELL & CUSTER, and  
GEORGE HUNT,

*Attorneys for Plaintiff.*

(Endorsed): Filed June 6, 1894.

S. W. BURNHAM, *Clerk.*



Afterwards, to wit : on the twenty-ninth day of October, in the October adjourned term of said court, 1894, in the record of proceedings thereof in said entitled cause before the Hon. Peter S. Grosscup, District Judge, appears the following entry, to wit :

Columbus Construction Company }  
*vs.*  
 Crane Company. }

Now come the parties by their attorneys, and on motion of plaintiff leave is given it to file additional counts instanter. And on defendant's motion it is ordered that the plea and notice of set-off to the original declaration, stand as two additional counts.

On the same day, to wit : the twenty-ninth day of October, 1894, came the plaintiff in said entitled cause by its attorneys, and by leave of court first had and obtained filed in the clerk's office of said court its additional counts, which said additional counts are in words and figures following, to wit :

42

## ADDITIONAL COUNTS.

UNITED STATES OF AMERICA,  
 NORTHERN DISTRICT OF ILLINOIS, } ss.  
 NORTHERN DIVISION. }

IN THE CIRCUIT COURT OF THE UNITED STATES FOR SAID DISTRICT  
 AND DIVISION.

Columbus Construction Company }  
*vs.*  
 Crane Company. } *Assumpsit.*

And now comes the said plaintiff, by Campbell & Custer, and George Hunt, its attorneys, leave of court having first been had and obtained therefor, and amends its declaration heretofore filed herein, by the addition of new counts thereto, in words and figures as follows, to wit :

And for that, whereas, also, heretofore, to wit: on the 28th day of June, in the year 1890, to wit: at the city of Chicago, in said district, by a certain contract in writing then and there made between the said plaintiff on the one part and the said defendant on the other part (which contract, with the papers referring to the subject-matter thereof, and attached to the declaration herein, are



hereby made a part hereof) it was agreed in manner and form following, that is to say:

That the said defendant would purchase as the agent of said plaintiff at the lowest obtainable price, which price should include freights to the point of delivery, same not to exceed the current rate of freight from point of shipment to Chicago, and would deliver to said plaintiff, and in consideration of the facilities and representations of the defendant, made to said plaintiff as in said contract alleged, said plaintiff would receive of the said defendant and pay said defendant for, wrought-iron standard line pipe as follows, that is to say: two hundred and sixty miles of eight-inch wrought-iron standard line pipe to weigh not less than 27.48 pounds per lineal foot. Ten to twenty miles of ten-inch wrought-iron standard line pipe to weigh not less than thirty-nine pounds per lineal foot exclusive of weight of collar. Ten to twenty miles of six-inch wrought-iron standard line pipe to weigh not less than 18.29 pounds per lineal foot, exclusive of weight of collar. Ten to twenty miles of four-inch wrought-iron standard line pipe to weigh not less than 10.39 pounds per lineal foot exclusive of weight of collar. Ten to twenty miles of three-inch wrought-iron standard line pipe to weigh not less than 7.35 pounds per lineal foot exclusive of weight of collar. Six thousand feet of 5 5-8 wrought-iron standard casing;

43 that the price to be paid therefor as aforesaid by the said plaintiff, including commissions or compensation of two and one-half per cent. to be paid to the said defendant, should be not more than ninety-one cents per lineal foot, for said eight-inch pipe, the price on the other sizes of said pipe to be in proportion to that price; that the said defendant would, unless prevented by strikes or other causes beyond its control, deliver said pipe or secure the delivery thereof to the said plaintiff, during the months of July, August and September, at such places as should be thereafter designated by the said plaintiff, and not later than October 1, 1890, and would deliver all the eight-inch pipe aforesaid, unless so prevented as aforesaid, so that not less than thirty-seven miles thereof should be delivered in July, not less than one hundred and twenty-three miles in August, and all the remainder thereof undelivered, in September, 1890, and prior to the fifteenth day of that month if possible; that the said defendant would so as aforesaid purchase and deliver, and the said plaintiff would take, all the wrought-iron standard line pipe aforesaid, in conformity with certain specifications and subject to certain conditions and tests more fully set forth and specified in the certain contract and specifications for standard eight-inch line pipe which were attached to said contract in writing between the said plaintiff and defendant and made part thereof, marked Exhibit "B," that is to say, that all of said wrought-iron

standard line pipe should be made from soft iron, free from blisters and other imperfections, and guaranteed to stand a working line pressure of one thousand pounds to the square inch and to prove tight in line, when proved and tested in line under said working pressure, which said working tests should be made with reasonable promptness, that each joint of pipe furnished under said contract should have eight threads to the inch and at least two inches of thread on each end, and that full, uniform taper should be given to the threads both on the pipe and in the collar, that the said plaintiff would pay to the said defendant the stipulated price in cash for said pipe, so to be purchased and delivered as aforesaid, upon the delivery thereof to the said plaintiff, and that said pipe should not be considered as accepted by said plaintiff by reason of any payments made therefor, so as to relieve the said defendant from liability on account of its defective character, until the whole should have been laid and tested in line and proved.

And the said contract in writing being so made as aforesaid, afterwards, to wit: on the day and year aforesaid, at, to wit: the city of Chicago, in said district, as aforesaid, in consideration thereof and that the said plaintiff at the special instance and request of the said defendant had then and there undertaken and faithfully promised the said defendant to perform and fulfill the said contract in all things

on the said plaintiff's part and behalf to be performed and fulfilled it, the said defendant, undertook, and then and there faithfully promised the said plaintiff to perform and fulfill the said contract in all things on the said defendant's part and behalf to be performed and fulfilled.

And the said plaintiff in fact saith that heretofore, and after the making of said agreement as aforesaid, to wit: on the first day of July, in the year 1890, at Chicago, in said district, the said defendant furnished to the said plaintiff a statement showing the prices at which said defendant would deliver to the said plaintiff the said pipe so agreed to be purchased and delivered as aforesaid, and that the prices so fixed as aforesaid, were, sixty miles of said eight-inch pipe manufactured by the Page Tube Company at eighty-eight and six-tenths cents per foot, sixty miles of said eight-inch pipe manufactured by the National Tube Works Company at eighty-eight and five-tenths cents per foot, forty miles of said eight-inch pipe manufactured by the Pittsburg Tube Company at eighty-eight and five-tenths cents per foot, forty miles of eight-inch pipe manufactured by the Reading Iron Company at eighty-eight cents per foot, twenty miles of said eight-inch pipe manufactured by Morris, Tasker & Company at eighty-eight cents per foot, twenty miles of said eight-inch pipe manufactured by Spang, Chalfant & Company at eighty-eight cents per foot, twenty miles of said eight-inch pipe manufac-

cents, 1894. tured by the said American Tube and Iron Company at eighty-eight cents per foot, and also ten miles of three-inch pipe at about twenty-two cents per foot, ten miles of four-inch pipe at about thirty cents per foot, ten miles of six-inch pipe at about fifty-five cents per foot, ten miles of ten-inch pipe at one dollar and thirty cents per foot, to which said several prices the said defendant added the said percentage of two and one-half per cent. hereinbefore mentioned and referred to.

And that thereafter and on various days and dates between the making of said contract and the twenty-fourth day of September, 1890, the said plaintiff designated to the said defendant places for the delivery of said pipe, and, to wit: on the 15th day of September, 1890, the said plaintiff notified the said defendant that it would require the delivery of all the pipe contracted for prior to October 1, 1890, and that at various dates, to wit: from the 21st day of August, 1890, to the 3d day of November, 1890, the said defendant delivered to the said plaintiff 95.14 miles of eight-inch pipe, as and for, and which purported to be of the description, character and quality which by the said contract, the said defendant was bound to deliver to the said plaintiff, and at various dates, to wit: from the sixth day of September to the twenty-fourth day of September, 1890, the said defendant delivered to said plaintiff 10.11 miles of ten-inch pipe, as and for, and which purported to be of the description, character and quality which by said contract the said defendant was bound to deliver to the said plaintiff, and at 45 various dates, to wit: from the 25th day of August, to the 15th day of October, 1890, the said defendant delivered to said plaintiff 1.94 miles of six-inch pipe as and for, and which purported to be of the description, character and quality which by said contract the said defendant was bound to deliver to the said plaintiff, and at various dates, to wit: from the 25th day of August to the 3d day of November, 1890, the said defendant delivered to the said plaintiff 3.54 miles of four-inch pipe as and for, and which purported to be of the description, character and quality which by the said contract the said defendant was bound to deliver to the said plaintiff, and at various dates, to wit: from the 15th day of August to the 18th day of August, 1890, the said defendant delivered to the said plaintiff 10.24 miles of three-inch pipe as and for, and which purported to be of the description, character and quality which by the said contract the said defendant was bound to deliver to said plaintiff, and at various dates, to wit: from the 23d day of August to the 28th day of August, 1890, the said defendant delivered to said plaintiff as in compliance with its said contract, six thousand feet of five and five-eighths-inch casing, and that all of said pipe and casing were so delivered or caused to be so delivered

by the said defendant to said plaintiff as in performance and fulfillment on the part of the defendant of the things in said contract on the said defendant's part and behalf to be performed and fulfilled. And the said plaintiff avers that although it was always, within the times limited by the said contract for the delivery of the pipe therein mentioned, as aforesaid, ready and willing to accept and receive said pipe and to pay for the same at the prices fixed by said contract, to wit: at the district aforesaid, whereof, the said defendant has always had notice, yet the said defendant, not regarding its said promise and undertaking, did not nor would within the times limited by the said contract, as aforesaid, deliver the said pipe to the said plaintiff at the district aforesaid, or elsewhere, but neglected and refused so to deliver the same, within the times so limited by said contract, whereby the said plaintiff has lost and been deprived of divers great gains and profits which might and otherwise would have arisen and accrued to it from the delivery of the said pipe to the said plaintiff within the times limited by the said contract as aforesaid, to wit: at the district aforesaid.

And the said plaintiff avers that after the delivery of said pipe including said casing as aforesaid, the said plaintiff never at any time accepted the same or agreed to receive it as performance or fulfillment of said contract on the part of said defendant, nor as conforming with the specifications, fulfilling the conditions or standing the tests prescribed in said contract, but that confiding in the said promise and undertaking of the said defendant, it did, to wit: at various dates aforesaid at the district aforesaid, receive of the said defendant the said pipe and casing so delivered as aforesaid, and then and there paid the said defendant  
46     ant for the same the said prices and sums of money stipulated and agreed, as aforesaid, and caused the tests in said contract prescribed to be made with reasonable promptness. Nevertheless the said defendant did not perform or regard its said promise and undertaking so by it made as aforesaid, in this, to wit: that all of said wrought iron standard line pipe, when the same was so delivered as aforesaid, was not in conformity with the specifications and did not fulfill the conditions and stand the tests prescribed in the said contract, and was not made from soft iron, free from blisters and other imperfections, and would not stand a working line pressure of one thousand pounds to the square inch, and would not prove tight in line when proved and tested in line under said working pressure, and further in this, to wit: that each joint of pipe furnished under said contract did not have eight threads to the inch and at least two inches of thread on each end, and that full, uniform taper was not given to the threads both on the pipe and in the collar, but, on the contrary thereof, all of the said wrought iron standard line pipe

nts. 194. was full of imperfections and was of a weak, imperfect, poor and defective quality, and was wholly unable to stand a working line pressure of one thousand pounds to the square inch or to prove tight in line, when proved and tested in line under said working pressure, and each joint of pipe furnished under said contract as aforesaid had less than two-inches of thread on each end and had more or less than eight threads to the inch and the taper given to the threads and each and every of them, both on the pipe and in the collar, was imperfect, partial and varying; of all of which the said defendant, then and there had notice; and the said defendant, not regarding its said promise and undertaking did not, nor would it, although often requested so to do, purchase and deliver to said plaintiff such goods, wares and merchandise as were required by said contract, but wholly neglected and refused so to do, and therein made default, and said defendant then and there so negligently and improperly conducted and behaved in and about the purchase and delivery of said goods, wares and merchandise that the same were by reason thereof not in conformity with the specifications and did not fulfill the conditions and did not stand the tests prescribed in said contract, but wholly failed therein and were of no value to the said plaintiff, whereby the said plaintiff not only lost all benefit, profit and advantage which it might and could have derived and acquired from the purchase and delivery by the said defendant of the said goods, wares and merchandise, but was also put to great expense of its moneys, to wit: the sum of six hundred thousand dollars, which was paid by it to the said defendant as and for the purchase price of said goods, wares and merchandise, and also was compelled to and did necessarily expend a large sum of money in and about the purchase of other goods, wares and merchandise to supply the place of the insufficient and defective goods, ware, 47 and merchandise so purchased and delivered by the said defendant as aforesaid, amounting to, to wit: the sum of two hundred thousand dollars over and above the said contract price of the said defective and insufficient goods, wares and merchandise so purchased and delivered as aforesaid by the defendant, and also necessarily laid out and expended a large sum of money, to wit: two hundred thousand dollars in and about the taking up of such defective and insufficient pipe so purchased and delivered by the said defendant, as aforesaid, as had been laid in line in the ground, and in and about unscrewing the same and taking the defective and insufficient collars therefrom and replacing such collars with other and sufficient collars and again laying said pipe, and in and about the re-threading and repairing of such portions of said defective and insufficient pipe as it was necessary to re-thread and repair in order to make it in those respects of the description, character and qual-

ity provided for in said contract, and in and about the taking the defective and insufficient collars from the other of the said insufficient and defective pipe so purchased and delivered by the said defendant as aforesaid, which had not been laid in line, and in replacing said collars with other and sufficient collars, and in and about the loading and hauling to and from the thread-mills, of such portions of said defective and insufficient pipe as it was necessary to re-thread and repair for the purpose aforesaid, all of which sums of money the plaintiff says were necessarily and reasonably expended in order that the said wrought iron standard line pipe might conform with the specifications and fulfill the conditions and stand the tests hereinbefore and in said contract set forth, and also sustained great loss and damage on occasion of its not being able to use the same at Chicago, in the district aforesaid, whereby the said plaintiff, having employed large numbers of men and secured teams, wagons, tools and machinery to lay said pipe for use, was greatly delayed, damaged and hindered in the prosecution of said work by the said failure of said defendant to comply with its contract in promptly delivering said pipe, and thereby sustained further damage and loss, to wit: in the sum of two hundred thousand dollars, at Chicago, in said district, and has been and is by reason of the premises otherwise greatly injured and damaged, to wit: at Chicago, in said district.

And for that, whereas, also, heretofore, to wit: on the 28th day of June, in the year 1890, to wit: at the City of Chicago, in said district by certain contract in writing then and there made between the said plaintiff of the one part and the said defendant of the other (which contract, with the papers referring to the subject-matter thereof and attached to the declaration herein, are hereby made a part hereof), it was agreed in manner and form following, that is to say:

That the said defendant would purchase at the lowest obtainable price, which price should include freights to the points of delivery same not to exceed the current rate of freight from point of shipment to Chicago, and would sell and deliver to said plaintiff, and in consideration of the facilities and representations of the defendant made to said plaintiff as in said contract alleged, said plaintiff would purchase and receive of the said defendant and pay said defendant for wrought iron standard line pipe as follows, that is to say:

Two hundred and sixty miles of eight-inch wrought iron standard line pipe to weigh not less than 27.48 pounds per lineal foot. Ten to twenty miles of ten-inch wrought iron standard line pipe to weigh not less than thirty-nine pounds per lineal foot, exclusive of collar. Ten to twenty miles of six-inch wrought iron standard line pipe to weigh not less than 18.29 pounds per lineal foot, exclusive of weight



of collar. Ten to twenty miles of four-inch wrought iron standard line pipe to weigh not less than 10.39 pounds per lineal foot, exclusive of weight of collar. Ten to twenty miles of three-inch wrought iron standard line pipe to weigh not less than 7.35 pounds per lineal foot, exclusive of weight of collar. Six thousand feet of five and five-eighths-inch wrought iron standard casing; that the price to be paid therefor as aforesaid by the said plaintiff, including two and one-half per cent. which in and by said contract was denominated a commission to be paid to the said defendant, but was in truth and in fact a part of the purchase price of said pipe to be paid by the plaintiff to the said defendant, should be not more than ninety-one cents per lineal foot, for said eight-inch pipe; the price on the other sizes of said pipe to be in proportion to that price; that the said defendant would, unless prevented by strikes or causes beyond its control, deliver said pipe or secure the delivery thereof to said plaintiff, during the months of July, August and September, at such places as should be thereafter designated by the said plaintiff, and not later than October 1, 1890, and would deliver all the eight-inch pipe aforesaid, unless so prevented as aforesaid, so that not less than thirty-seven miles thereof should be delivered in July, not less than one hundred and twenty-three miles in August, and all the remainder thereof undelivered, in September, 1890, and prior to the fifteenth day of that month if possible; that the said defendant would so as aforesaid purchase and deliver and the said plaintiff would take, all the wrought iron standard line pipe aforesaid, in conformity with certain specifications and subject to certain conditions and tests more fully set forth and specified in the certain contract and specifications for standard eight-inch line pipe which were attached to said contract in writing between the said plaintiff and defendant and made a part thereof, marked Exhibit "B", that is to say, that all of said wrought iron standard line pipe should be made from soft iron, free from blisters and other imperfections, and guaranteed to stand a working line pressure of one thousand pounds to the square inch and to  
49 prove tight in line, when proved and tested in line under said working pressure, which said working tests should be made with reasonable promptness, that each joint of pipe furnished under said contract should have eight threads to the inch and at least two inches of thread on each end, and that full, uniform taper should be given to the thread both on the pipe and in the collar, that the said plaintiff would pay to the said defendant the stipulated price in cash for said pipe, so to be purchased and delivered as aforesaid, upon the delivery thereof to the said plaintiff, and that said pipe should not be considered as accepted by said plaintiff by reason of any payments made therefor, so as to relieve the said

defendant from liability on account of its defective character, until the whole should have been laid and tested in line and proved.

And the said contract in writing being so made as aforesaid, afterwards, to wit: on the day and year aforesaid, at, to wit: the city of Chicago, in said district, as aforesaid, in consideration thereof and that the said plaintiff at the special instance and request of the said defendant had then and there undertaken and faithfully promised, the said defendant to perform and fulfill the said contract in all things on the said plaintiff's part and behalf to be performed and fulfilled, it, the said defendant, undertook and then and there faithfully promised the said plaintiff to perform and fulfill the said contract in all things on the said defendant's part and behalf to be performed and fulfilled.

And the said plaintiff in fact saith that heretofore, and after the making of said agreement as aforesaid, to wit: on the first day of July, in the year 1890, at Chicago, in said district, the said defendant furnished to the said plaintiff a statement showing the prices at which said defendant would deliver to the said plaintiff the said pipe so agreed to be purchased and delivered as aforesaid, and that the prices so fixed as aforesaid, were sixty miles of said eight-inch pipe manufactured by the Page Tube Company at eighty-eight and six-tenths cents per foot, sixty miles of said eight-inch pipe manufactured by the National Tube Works Company at eighty-eight and five-tenths cents per foot, forty miles of said eight-inch pipe manufactured by the Pittsburg Tube Company at eighty-eight and five-tenths cents per foot, forty miles of said eight-inch pipe manufactured by the Reading Iron Company at eighty-eight cents per foot, twenty miles of said eight-inch pipe manufactured by Morris, Tasker & Company at eighty-eight cents per foot, twenty miles of said eight-inch pipe manufactured by Spang, Chalfant & Company at eighty-eight cents per foot, twenty miles of said eight-inch pipe manufactured by the said American Tube and Iron Company at eighty-eight cents per foot, and also ten miles of three-inch pipe at about twenty-two cents per foot, ten miles of four-inch pipe at about thirty cents per foot, ten miles of six-inch pipe at about fifty-five cents per foot, ten miles of ten-inch pipe at one dollar and thirty cents per foot, to which said several prices the said defendant added the said per centage of two and one-half per cent. hereinbefore mentioned and referred to.

And that thereafter and on various days and dates between the making of said contract and the twenty-fourth day of September, 1890, the said plaintiff designated to the said defendant places for the delivery of said pipe, and, to wit: on the 15th day of September, 1890, the said plaintiff notified the said defendant that it would require the delivery of all pipe contracted for prior to October 1,



1890, and that at various dates, to wit: from the twenty-first day of August, 1890, to the third day of November, 1890, the said defendant delivered to the said plaintiff 95.14 miles of eight-inch pipe as and for, and which purported to be of, the description, character and quality which by the said contract, the said defendant was bound to deliver to the said plaintiff, and at various dates, to wit: from the sixth day of September to the twenty-fourth day of September, 1890, the said defendant delivered to said plaintiff 10.11 miles of ten-inch pipe, as and for, and which purported to be of, the description, character and quality which by the said contract the said defendant was bound to deliver to the said plaintiff, and at various dates, to wit: from the 25th day of August to the 15th day of October, 1890, the said defendant delivered to said plaintiff 1.94 miles of six-inch pipe as and for, and which purported to be of, the description, character and quality which by the said contract the said defendant was bound to deliver to the said plaintiff, and at various dates, to wit: from the 25th day of August to the 3d day of November, 1890, the said defendant delivered to the said plaintiff 3.54 miles of four-inch pipe as and for, and which purported to be of, the description, character and quality which by the said contract the said defendant was bound to deliver to the said plaintiff and at various dates, to wit: from the 15th day of August to the 18th day of August, 1890, the said defendant delivered to the said plaintiff 10.24 miles of three-inch pipe as and for, and which purported to be of, the description, character and quality which by the said contract the said defendant was bound to deliver to said plaintiff, and at various dates, to wit: from the 23d day of August to the 28th day of August, 1890, the said defendant delivered to said plaintiff as in compliance with its said contract, six thousand feet of five and five-eighths-inch casing; and that all of said pipe and casing was so delivered or caused to be so delivered by the said defendant to said plaintiff as in performance and fulfillment on the part of the defendant of the things in said contract on the said defendant's part and behalf to be performed and fulfilled.

And the said plaintiff avers that although it was always, within the times limited by the said contract for the delivery of the pipe therein mentioned, as aforesaid, ready and willing to accept  
51 and receive said pipe and to pay for the same at the prices fixed by said contract, to wit: at the district aforesaid, whereof the said defendant has always had notice, yet the said defendant, not regarding its said promise and undertaking, did not nor would within the times limited by the said contract, as aforesaid, deliver the said pipe to the said plaintiff at the district aforesaid, or elsewhere, but neglected and refused so to deliver the same, within the times so limited by said contract, whereby the said plaintiff has lost

and been deprived of divers great gains and profits which might and otherwise would have arisen and accrued to it from the delivery of the said pipe to the said plaintiff within the times limited by the said contract as aforesaid, to wit: at the district aforesaid.

And the said plaintiff avers that after the delivery of said pipe, including said casing as aforesaid, the said plaintiff never at any time accepted the same or agreed to receive it as in performance or fulfillment of said contract on the part of said defendant, nor as conforming with the specifications, fulfilling the conditions or standing the tests prescribed in said contract, but that, confiding in the said promise and undertaking of the said defendant, it did, to wit: at the various dates aforesaid, at the district aforesaid, receive of the said defendant the said pipe and casing so delivered as aforesaid, and then and there paid the said defendant for the same the said prices and the sums of money stipulated and agreed, as aforesaid, and caused the tests in said contract prescribed to be made with reasonable promptness. Nevertheless, the said defendant did not perform or regard its said promise and undertaking so by it made as aforesaid, in this, to wit: that all of said wrought iron standard line pipe, when the same was so delivered as aforesaid, was not in conformity with the specifications and did not fulfill the conditions and stand the tests prescribed in the said contract, and was not made from soft iron, free from blisters and other imperfections, and would not stand a working line pressure of one thousand pounds to the square inch, and would not prove tight in line, when proved and tested in line under said working pressure, and further in this, to wit: that each joint of pipe furnished under said contract did not have eight threads to the inch and at least two inches of thread on each end, and that full, uniform taper was not given to the threads both on the pipe and in the collar, but, on the contrary thereof, all of said wrought iron standard line pipe was full of imperfections, and was of a weak, imperfect, poor and defective quality, and was wholly unable to stand a working line pressure of one thousand pounds to the square inch or to prove tight in line, when proved or tested in line under said working pressure, and each joint of pipe furnished under said contract as aforesaid had less than two inches of thread on each end, and had more or less than eight threads to the inch and the taper given to the threads, and each and every of them, both on the pipe and in the collar, was imperfect, partial and varying; of all of which the said defendant  
52 then and there had notice, and the said defendant, not regarding its said promise or undertaking did not, nor would it, although often requested so to do, purchase, sell and deliver to said plaintiff such goods, wares and merchandise as were required by said contract, but wholly neglected and refused so to do, and

therein made default, and said defendant then and there so negligently and improperly conducted and behaved in and about the purchase, sale and delivery of said goods, wares and merchandise that the same were by reason thereof not in conformity with the specifications and did not fulfill the conditions and did not stand the tests prescribed in said contract, but wholly failed therein and were of no value to the said plaintiff, whereby the said plaintiff not only lost all benefit, profit and advantage which it might and could have derived and acquired from the purchase, sale and delivery by the said defendant of the said goods, wares and merchandise, but was also put to great expense of its moneys, to wit: the sum of \$600,000 which was paid by it to the said defendant as and for the purchase price of said goods, wares and merchandise, and also was compelled to and did necessarily expend a large sum of money in and about the purchase of other goods, wares and merchandise to supply the place of the insufficient and defective goods, wares and merchandise so purchased, sold and delivered by the said defendant as aforesaid, amounting to, to wit: the sum of two hundred thousand dollars over and above the said contract price of the said defective and insufficient goods, wares and merchandise so purchased and delivered as aforesaid, by the defendant, and also necessarily laid out and expended a large sum of money, to wit: two hundred thousand dollars, in and about the taking up of such defective and insufficient pipe so purchased, sold and delivered by the said defendant, as aforesaid, as had been laid in line in the ground and in and about unscrewing the same and taking the defective and insufficient collars therefrom and replacing such collars with other and sufficient collars and again laying said pipe, and in about the re-threading and repairing of such portions of said defective and insufficient pipe as it was necessary to re-thread and repair in order to make it in those respects of the description, character and quality provided for in said contract, and in and about the taking the defective and insufficient collars from the other of said insufficient and defective pipe so purchased, sold and delivered by the said defendant as aforesaid, which had not been laid in line, and replacing said collars with other and sufficient collars, and in and about the loading and hauling to and from the thread-mills, of such portions of said defective and insufficient pipe as it was necessary to re-thread and repair for the purpose aforesaid, all of which sums of money the plaintiff says were necessarily and reasonably expended in order that the said wrought iron standard line pipe might conform with the specifications and fulfill the conditions and stand the tests hereinbefore and in said contract set forth and also sustained great loss and damage on occasion of its not being able to use the same at Chicago, in the district aforesaid, whereby the

said plaintiff, having employed large numbers of men and secured teams, wagons, tools and machinery to lay said pipe for use, was greatly delayed, damaged and hindered in the prosecution of said work by the said failure of said defendant to comply with its contract in promptly delivering said pipe, and thereby sustained further damage and loss, to wit: in the sum of two hundred thousand dollars at Chicago, in said district, and has been and is by reason of the premises otherwise greatly injured and damaged, to wit: at Chicago, in said district. And for that, whereas the said defendant heretofore, to wit: on the twenty-second day of May, in the year of our Lord one thousand eight hundred and ninety-one at the city of Chicago, to wit: at the district aforesaid, became and was indebted to the said plaintiff in the sum of one million dollars of lawful money of the United States of America, for divers goods, wares and merchandise, by the said plaintiff before that time sold and delivered to the said defendant and at the special instance and request of the said defendant, and being so indebted to the said plaintiff, the said defendant in consideration thereof, afterwards, to wit: on the same day and year, and at the place aforesaid, undertook and then and there faithfully promised the said plaintiff well and truly to pay unto the said plaintiff the sum of money last mentioned, when the said defendant should be thereunto afterwards requested.

And whereas, also, the said defendant, afterwards, to wit: on the same day and year, and at the place aforesaid, in consideration that the said plaintiff had before that time, at the like special instance and request of the said defendant, sold and delivered to the said defendant divers other goods, wares and merchandise of the said plaintiff, the said defendant then and there undertook and faithfully promised the said plaintiff that the said defendant would well and truly pay to the said plaintiff so much money as the last aforesaid goods, wares and merchandise at the time of the sale and delivery thereof, were reasonably worth when the said defendant should be thereunto afterwards requested, and the said plaintiff avers that the said goods, wares and merchandise last mentioned at the time of the sale and delivery thereof were reasonably worth the further sum of one million dollars of like lawful money as aforesaid, at the place aforesaid, whereof the said defendant afterwards, on the same day and year, and at the place aforesaid had notice.

And whereas, also, the said defendant, afterwards, to wit: on, the same day and year, and at the place aforesaid, was indebted to the said plaintiff in the further sum of one million dollars of like lawful money as aforesaid, for money before that time lent and advanced by the said plaintiff to the said defendant and at the like request of the said defendant.

54 And in the like sum for other money by the said plaintiff before that time paid, laid out and expended for the said defendant and at the like request of the said defendant. And in the like sum for other money by the said defendant before that time had and received to and for the use of the said plaintiff. And in the like sum for other money before that time and then due and owing the said plaintiff for interest upon and for the forbearance of divers other sums of money before that time due and owing from said defendant to said plaintiff. And in the like sum for the price and value of work then done and material for the same provided by the said plaintiff for the said defendant and at the like special request of the said defendant. And being so indebted, the said defendant in consideration thereof afterwards, to wit: on the same day and year, and at the place aforesaid, undertook, and then and there faithfully promised the said plaintiff well and truly to pay unto the said plaintiff the several sums of money in this count mentioned, when the said defendant should be thereunto afterwards requested.

And whereas, also, the said defendant afterwards, to wit: on the day and year last aforesaid, and at the place last aforesaid, accounted together with the said plaintiff of and concerning divers other sums of money, before that time due and owing from the said defendant to the said plaintiff, and then and there being in arrears, and unpaid, and upon such accounting the said defendant then and there was found to be in arrears and indebted to the said plaintiff in the further sum of \$1,000,000 of like lawful money as aforesaid. And being so found in arrears and indebted to the said plaintiff, the said defendant in consideration thereof afterwards, to wit: on the day and year last aforesaid, and at the place last aforesaid, undertook and then and there faithfully promised the said plaintiff well and truly to pay unto the said plaintiff the sum of money last mentioned when the said defendant should be thereunto afterwards requested, Nevertheless, the said defendant (although often requested, etc.) has not yet paid the said several sums of money above mentioned, or any or either of them, or any part thereof, to the said plaintiff, but to pay the same or any part thereof to the said plaintiff the said defendant has hitherto altogether refused, and still does refuse, to the damage of the said plaintiff of \$1,000,000, and therefore the said plaintiff brings suit, etc.

CAMPBELL & CUSTER and  
GEO. HUNT,

*Plaintiff's Attorneys.*

(Endorsed): Filed October 29, 1894.

S. W. BURNHAM, *Clerk.*

55 Afterwards, to wit: on the third day of December, in the adjourned October term of said court, 1894, in the record of proceedings thereof, in said entitled cause before the Hon. William H. Seaman, district judge, appears the following entry, to wit:

Columbus Construction Company }  
*v/s.*  
 Crane Company. }

Now come the parties, by their attorneys, and also come a jury of good and lawful men, to wit: George Smith, Elijah Kasson, Fred Sadler, A. H. Clark, C. F. Dyke, C. J. McClure, John B. Paine, John Mattocks, Louis P. Rum, Thos. Bright, H. W. Mahoney and Elam Ellingston, who were all duly elected, tried and sworn well and truly to try the issues herein, and the hour of adjournment having arrived, the further trial hereof is adjourned until to-morrow morning.

Afterwards, to wit: on the fourth day of December, in the adjourned October term of said court, 1894, in the record of proceedings thereof, in said entitled cause before the Hon. William H. Seaman, district judge, appears the following entry, to wit:

Columbus Construction Company }  
*v/s.*  
 Crane Company. }

Now again come the parties, by their attorneys, and again come the jury, and after hearing the evidence in part the further trial thereof is postponed until to-morrow morning.

Afterwards, to wit: on the fifth day of December, in the adjourned October term of said court, 1894, in the record of proceedings thereof, before the Hon. William H. Seaman, district judge, appears the following entry, to wit:

Columbus Construction Company }  
*v/s.*  
 Crane Company. }

Now again come the parties, by their attorneys, and again come the jury and after further hearing the evidence in part the trial hereof is postponed until to-morrow morning.

Afterwards, to wit: on the sixth day of December, in the adjourned October term of said court, 1894, in the record of proceedings thereof, in said entitled cause before the Hon. William H. Seaman, district judge, appears the following entry, to wit:

56 Columbus Construction Company }  
                                  *vs.*  
                                  Crane Company. }

Now again come the parties by their attorneys, and again come the jury, and having heard further evidence in part the trial hereof is postponed until to-morrow morning.

Afterwards, to wit: on the seventh day of December, in the adjourned October term of said court, 1894, in the record of proceedings thereof, in said entitled cause before the Hon. William H. Seaman, district judge, appears the following entry, to wit:

Columbus Construction Company }  
                                  *vs.*  
                                  Crane Company. }

Now again come the parties by their attorneys, and again come the jury, and having heard further evidence in part the trial hereof is postponed until to-morrow morning.

Afterwards, to wit: on the eighth day of December, in the adjourned October term thereof of said court, 1894, in the record of proceedings thereof, in said entitled cause before the Hon. William H. Seaman, district judge, appears the following entry, to wit:

Columbus Construction Company }  
                                  *vs.*  
                                  Crane Company. }

Now again come the parties by their attorneys, and also come the jury, and after hearing further evidence in part the trial hereof is postponed until Monday morning.



Afterwards, to wit: on the tenth day of December, in the adjourned October term of said court, 1894, in the record of proceedings thereof, in said entitled cause, before the Hon. William H. Seaman, district judge, appears the following entry, to wit:

57 Columbus Construction Company }  
   *v/s.*  
   Crane Company. }

Now again come the parties by their attorneys, and again come the jury, and after hearing further evidence in part the trial hereof is adjourned until to-morrow morning.

Afterwards, to wit: on the eleventh day of December, in the adjourned October term of said court, 1894; in the record of proceedings thereof, in said entitled cause before the Hon. William H. Seaman, district judge, appears the following entry, to wit:

Columbus Construction Company }  
   *v/s.*  
   Crane Company. }

Now again come the parties by their attorneys, and again come the jury, and after hearing further evidence in part the trial hereof is postponed until to-morrow morning.

On the same day, to wit: on the eleventh day of December, 1894, there was filed in the clerk's office of said court the affidavit of Charles S. Holt, which said affidavit is in the words and figures following, to wit:

58 AFFIDAVIT OF CHARLES S. HOLT.

UNITED STATES OF AMERICA, NORTHERN DISTRICT OF ILLINOIS.

Columbus Construction Company }  
   *v/s.*  
   Crane Company. }

Charles S. Holt, being duly sworn, on oath says: I attended the taking of the deposition of George L. Forman, of New York City, on October 31, 1894, and conducted the cross-examination as attorney for defendant. By consent the deposition was taken down



Charles in shorthand and written out after I had left New York to return to Chicago, and I never read or examined it until it was read on the trial of this cause on December 8th.

The last answer of the witness on page thirty of said deposition, is incorrectly reported, in this, that the witness did not use the words "They were not uniform" as reported in said deposition. According to my recollection the sentence as given by the witness was as follows: "Mr. Hequembourg did want uniform joints to make them interchangeable, but the word uniform only came in connection as having the joints in the different mills uniform." Whether this was exact language of the witness or not I am absolutely positive he did not use the words "They are not uniform." That statement is wholly foreign to the subject and scope of the entire examination which related not to the condition of the couplings as finally manufactured, but to the instructions given in respect to their manufacture and the reason for such instructions. The words "They were not uniform" were also wholly irresponsible to the question. I believe that if the time were afforded, the testimony of said Forman could be obtained showing that he did not make the statement attributed to him by the deposition and that he has no knowledge whether they were or were not uniform. Said Forman is, as I understand and believe, absent from the jurisdiction of this court, and his attendance upon trial cannot be secured.

CHARLES S. HOLT.

Subscribed and sworn to before me this eleventh day of December, 1894.

S. W. BURNHAM, *Clerk.*

(Endorsed): Filed Dec. 11, 1894.

S. W. BURNHAM, *Clerk.*

59 Afterwards, to wit: on the twelfth day of December, in the adjourned October term of said court, 1894, in the record of proceedings thereof, in said entitled cause, before the Hon. William H. Seaman, district judge, appears the following entry, to wit:

Columbus Construction Company }  
*vs.*  
 Crane Company. }

Now again come the parties by their attorneys and again come the jury, and after hearing the evidence further in part, the trial hereof is adjourned until to-morrow morning.

Afterwards, to wit: on the thirteenth day of December, in the adjourned October term of said court, 1894, in the record of proceedings thereof, in said entitled cause, before the Hon. William H. Seaman, district judge, appears the following entry, to wit:

Columbus Construction Company }  
*vs.*  
 Crane Company. }

Now again come the parties by their attorneys and also come the jury, and after hearing further evidence in part, the trial hereof is adjourned until to-morrow morning.

Afterwards, to wit: on the fourteenth day of December, in the adjourned October term of said court, 1894, in the record of proceedings thereof, in said entitled cause, before the Hon. William H. Seaman, district judge, appears the following entry, to wit:

Columbus Construction Company }  
*vs.*  
 Crane Company. }

Now again come the parties by their attorneys and again come the jury, and after hearing further evidence in part the trial hereof is postponed until to-morrow morning.

Afterwards, to wit: on the fifteenth day of December, in the adjourned October term of said court, 1894, in the record of proceedings thereof, in said entitled cause, before the Hon. William H. Seaman, district judge, appears the following entry, to wit:

60 Columbus Construction Company }  
*vs.*  
 Crane Company. }

Now again come the parties by their attorneys and also come the jury, and after hearing further evidence in part the trial hereof is adjourned until Monday next.

Afterwards, to wit: on the seventeenth day of December, in the December term of said court, 1894, in the record of proceedings thereof, in said entitled cause, before the Hon. William H. Seaman, District Judge, appears the following entry, to wit:

ed. Columbus Construction Company }  
  *vs.*  
  Crane Company. }

Now again come the parties by their attorneys, and again come the jury, and after hearing further evidence in part, the further trial hereof is postponed until to-morrow.

Afterwards, to wit: on the eighteenth day of December, in the December term of said court, 1894, in the record of proceedings thereof, in said entitled cause, before the Hon. William H. Seaman, District Judge, appears the following entry, to wit:

Columbus Construction Company }  
  *vs.*  
  Crane Company. }

Now again come the parties by their attorneys, and again come the jury, and after hearing further evidence in part, the further trial hereof is postponed until to-morrow.

Afterwards, to wit: on the nineteenth day of December, in the December term of said court, 1894, in the record of proceedings thereof, in said entitled cause, before the Hon. William H. Seaman, District Judge, appears the following entry, to wit:

61 Columbus Construction Company }  
  *vs.*  
  Crane Company. }

Now again come the parties by their attorneys, and again come the jury, and after hearing further evidence in part, the trial hereof is postponed until to-morrow.

Afterwards, to wit: on the twentieth day of December, in the December term of said court, 1894, in the record of proceedings thereof, in said entitled cause, before the Hon. William H. Seaman, District Judge, appears the following entry, to wit:

Columbus Construction Company }  
  *vs.*  
  Crane Company. }

Now again come the parties by their attorneys, and again

come the jury, and after hearing further evidence, the trial hereof is adjourned until to-morrow.

Afterwards, to wit: on the twenty-first day of December, in the December term of said court, 1894, in the record of proceedings thereof, in said entitled cause, before the Hon. William H. Seaman, District Judge, appears the following entry, to wit:

Columbus Construction Company }  
*vs.*  
 Crane Company. }

Now again come the parties by their attorneys, and again come the jury, and after hearing evidence to conclusion and arguments in part, the further trial hereof is postponed until to-morrow.

Afterwards, to wit: on the twenty-second day of December, in the December term of said court, 1894, in the record of proceedings thereof, in said entitled cause, before the Hon. William H. Seaman, District Judge, appears the following entry, to wit:

Columbus Construction Company }  
*vs.*  
 Crane Company. }

Now again come the parties by their attorneys, and again come the jury, and after hearing further arguments, the trial hereof is adjourned until Wednesday next.

62 Afterwards, to wit: on the twenty-sixth day of December, in the December term of said court, 1894, in the record of proceedings thereof, in said entitled cause, before the Hon. William H. Seaman, District Judge, appears the following entry, to wit:

Columbus Construction Company }  
*vs.*  
 Crane Company. }

Come again the parties by their attorneys, and again come the jury, and after hearing further arguments in part, the trial hereof is adjourned until to-morrow morning.

d. Afterwards, to wit: on the twenty-seventh day of December, in the December term of said court, 1894, in the record of proceedings thereof in said entitled cause, before the Hon. William H. Seaman, District Judge, appears the following entry, to wit:

Columbus Construction Company }  
*vs.*  
 Crane Company. }

Come again the parties by their attorneys, and come again the jury, and after hearing further arguments in part, the trial hereof is postponed until to-morrow.

Afterwards, to wit: on the twenty-eighth day of December, in the December term of said court, 1894, in the record of proceedings thereof, in said entitled cause, before the Hon. William H. Seaman, District Judge, appears the following entry, to wit:

Columbus Construction Company }  
*vs.*  
 Crane Company. }

Now again come the parties by their attorneys, and after hearing the arguments to conclusion, and the instructions of the court, the jury retire to consider of their verdict.

29. Afterwards, to wit: on the twenty-ninth day of December, in the December term of said court, 1894, in the record of proceedings thereof, in said entitled cause, before the Hon. William H. Seaman, District Judge, appears the following entry, to wit:

63 Columbus Construction Company }  
*vs.*  
 Crane Company. }

Now again come the parties by their attorneys, and also come the jury and return their verdict as follows: "We, the jury, find the issues in favor of the plaintiff and assess its damages in the sum of forty-eight thousand dollars (\$48,000) over and above all demands of the defendant, A. H. Clark, Foreman."

Whereupon upon motion of defendant by its attorney, the jury was polled, and on inquiry of the clerk to each juror "Was this

and is this now your verdict?" all the jurors responded affirmatively.

Verd  
189

And thereupon said defendant by its attorney enters its motion for new trial herein, and parties stipulate in open court that if judgment be entered upon verdict the bill of exceptions be settled thereafter as of the term.

(Motion for new trial and affidavit omitted.)

65 On the same day, to wit : the eighteenth day of January, 1895, in the December term of said court, 1894, in the record of proceedings thereof, in said entitled cause before the Hon. William H. Seaman, District Judge, appears the following entry, to wit :

Hea  
for

Columbus Construction Company }  
v.s.  
Crane Company. }

Now come the parties by their attorneys, and comes on to be heard the motion of defendant for a new trial, and after hearing the arguments of counsel thereon in part the further trial hereof is adjourned until to-morrow.

Afterwards, to wit : on the nineteenth day of January, 1895, in the December term of said court, 1894, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, District Judge, appears the following entry, to wit :

Columbus Construction Company }  
v.s.  
Crane Company. }

Come again the parties by their attorneys and the court having heard the arguments of counsel to conclusion, takes the defendant's motion for a new trial under advisement.

Afterwards, to wit : on the twenty-sixth day of February, A. D. 1895, there was filed in the clerk's office of said court an opinion by Judge Seaman, which said opinion is in the words and figures following, to wit :

UNITED STATES CIRCUIT COURT, NORTHERN DISTRICT OF  
ILLINOIS.

Columbus Construction Company }  
*vs.*  
 Crane Company. }

SEAMAN, *Judge:*

The verdict of the jury was in favor of the plaintiff for \$48,000, over and above all set-offs or claims by the defendant. In effect it cancels a large amount which would be clearly due to the defendant for pipe furnished, if the pipe was in conformity with contract, aggregating \$80,000 to \$120,000. The defendant moves for a new trial, upon alleged errors of law in rulings upon the evidence and instructions, and because the verdict is contrary to the evidence.

The magnitude of the interests involved, and the important bearing of the questions raised, have well justified the extended oral arguments and the briefs which have been submitted, and I have taken all the time that could justly be afforded to their consideration, but must rest with a statement of my conclusions, as the pressure of other duties will not permit any elaboration of my views.

1. I have made a much more thorough examination of the questions of law than could be given at the trial, in which the printed arguments upon either side have been carefully considered and many of the authorities cited have been read. While I am not prepared to say that I am entirely confident the rulings which were excepted to were right—especially those with reference to the offer of the contract with the Indiana Natural Gas and Oil Company, and the effect of the Indiana statute—they do not appear to me to have been clearly wrong, but are questions which should be settled before another trial, if the verdict can otherwise stand upon the facts. Each of the rulings complained of is vital to the verdict, and if error should be held by the Appellate Court as to either, it would work a reversal, with instructions which would guide or obviate a new trial. A mere doubt with respect to them upon any point, should not enter in to turn the scale upon the next question, whether the verdict is supported by evidence.

The objection that the instructions did not specifically call attention to all the features of the evidence, especially with reference to conformity in thread and taper, does not appear material. I

67 cannot believe that the jury were misled or misapprehended the force of the claims in this regard which constantly appeared in testimony and argument. In reviewing the instructions it seems to me that any short coming in the recital of evidence and claims in controversy was in favor of the defendant, and that in the anxiety to mark the lines of the burden of proof, for the necessary protection of the defendant, the claims of the plaintiff were not so clearly emphasized as the proofs would have warranted. But the bearings were so well marked throughout the trial and arguments so well directed, that recapitulation became unnecessary. At any rate I am satisfied that the defendant was not prejudiced by any omission of comment on the evidence.

2. The argument that the verdict is against the evidence is presented with great force, but upon the same views which were well argued before the jury. The issue was whether or not the pipe as delivered conformed to the requirements of the contract. It was entirely and peculiarly an issue of fact, with the burden of proof unmistakable placed upon the plaintiff. The defendant's testimony tended to show the utmost care upon the part of the manufacturers in the making and testing of the pipe, and in its shipment, and was so far persuasive, but of course not conclusive. About twelve miles of this pipe laid in the fall of 1890, and in the vicinity of Deep River, was subjected to preliminary tests, which were made with air, and at a pressure under 100 pounds, and it was manifest that as laid in line it was entirely inadequate throughout its length for the conveyance of gas. At the last of these tests there were present representatives of the defendant, and it appears to have been unquestioned that the defect in line was radical. There is no evidence that it was then agreed or understood that the fault was located or directly charged upon or admitted by either party, and its responsibility does not appear to have been seriously discussed or suggested, but the crucial question, whether the defect was due to insufficiency in the pipe as furnished, or to want of care in handling and laying, was left to be raised when the matter had reached the stage of controversy. I do not think there was anything in the conduct or assertions of either party to preclude any showing which might be made upon that issue. The jury were instructed that the onus was on the plaintiff, that the fact of insufficiency in line must not be taken to establish defect in the pipe as furnished, but the plaintiff must show by preponderance of the evidence that the pipe was handled with proper care, and laid in proper manner. The testimony upon the part of the plaintiff clearly tends to this showing—that skilled men were employed in the work, and that they adopted the usual and best methods of handling and laying and exercised care. This was opposed



Feb. by the testimony on behalf of the defendant tending to show carelessness and fault in the work as a cause for the leaks in 68 line. There was a mass of other testimony, directed on the one hand to showing that the pipe as furnished was defective in thread and taper and in the weight of the collars, and on the other that they were sufficient if properly laid. The issue of fact was thus squarely presented and it was the province of the jury to determine the truth and weight of the evidence, and upon which side the most satisfactory showing was made. I cannot find that there was a want of substantial evidence in support of the verdict, nor can I say that the substantial evidence is so entirely one way and in favor of the defendants' contention that a contrary verdict evinces prejudice or other improper influence. Upon this motion the question is not what may be the opinion of the Judge upon the weight or credibility of the evidence where there is a substantial conflict. To set aside a verdict upon such considerations alone would be an invasion of the constitutional right of trial by jury. I think there is a sufficiency of evidence to support the verdict.

The point that the amount of the plaintiff's recovery is not in accordance with the evidence is not well taken. Finding in favor of the plaintiff, the jury were authorized to fix the difference in value, having regard to all the evidence. They were not bound by the estimates made by Mr. Hequembourg, or the partial estimates of Mr. Kilgore. The fact that they reach an amount between those figures does not impeach the verdict.

3. I find no ground for the charge of misconduct of the juror. The motion for a new trial must be denied. It is so ordered.

(Endorsed): Filed Feb. 26, 1895.

S. W. BURNHAM, *Clerk.*

March 69 Afterwards, to wit: on the sixth day of March, in the adjourned March term of said court, 1895, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, District Judge, appears the following entry, to wit:

Columbus Construction Company }  
   *vs.* }  
   Crane Company. }

Now, again, come the parties by their attorneys, and upon motion of the plaintiff for judgment upon the verdict herein: It is considered and adjudged by the court that the plaintiff do have

and recover of and from the defendant the said sum of forty-eight thousand dollars, its damages, together with its costs therein to be taxed, and that execution issue therefor.

It is further ordered that the defendant be and it is allowed until July 1 next to file its bill of exceptions.

It is further ordered that execution upon the judgment herein be stayed for thirty days upon filing a bond in the sum of seventy-five thousand dollars.

Here follows supersedeas, bond, defendants' bill of exceptions, petition for writ of error, assignment of errors, and order allowing the same not copied.

70 On the fifth day of October, in the July term of said court, 1896, in the record of proceedings thereof in said entitled cause, before the Hon. Peter S. Grosscup, district judge, appears the following entry, to wit:

Order of October 5, 1896, granting leave to plaintiff to file mandate.

The Columbus Construction Company,  
22015  
vs.  
Crane Company.

Now comes the plaintiff, by its attorney, and presents the mandate of the Circuit Court of Appeals for the Seventh circuit, and thereupon leave is given to file the same, and this cause is reinstated upon the docket of pending causes for trial.

On the same day, to wit: the fifth day of October, 1896, came the plaintiff, by its attorney, and by leave of court first had and obtained, filed in the clerk's office of said court its mandate from the United States Circuit Court of Appeals for the Seventh circuit, which said mandate is in the words and figures following, to wit:

#### MANDATE.

United States of America, ss.

The President of the United States of America.

To the Honorable, the Judges of the Circuit Court of  
(SEAL) the United States for the Northern District of  
Illinois.

Greeting:

Oct. 71 Whereas, lately in the Circuit Court of the United States for the Northern District of Illinois, before you, or some of you, in a cause between Columbus Construction Company, a corporation existing under and by virtue of the laws of the State of New Jersey, and a citizen of the State of New Jersey, plaintiff, and The Crane Company, a corporation existing under and by virtue of the laws of the State of Illinois, and a citizen of the State of Illinois, defendant, the judgment of the said Circuit Court, entered on the sixth day of March. 1895, was in the following words, to wit:

"Columbus Construction Company,  
v.  
Crane Company.

"Now again comes the parties, by their attorneys. and upon motion of the plaintiff for judgment upon the verdict herein: It is considered and adjudged by the court that the plaintiff do have and recover of and from the defendant, the said sum of forty-eight thousand dollars, its damages, together with its costs herein to be taxed, and that execution issue therefor," as by the inspection of the transcript of the record of the said Circuit Court, which was brought into the United States Circuit Court of Appeals for the Seventh circuit by virtue of a writ of error agreeably to the act of Congress, in such case made and provided, fully and at large appears.

And, whereas, in the term of October, in the year of our Lord, one thousand eight hundred and ninety-five, the said cause came on to be heard before the said United States Circuit Court of Appeals for the Seventh circuit, on the said transcript of record, and was argued by counsel.

72 On consideration whereof, it is ordered and adjudged by this court that the judgment of the said Circuit Court in this cause be, and the same is hereby reversed, with costs.

And that this cause be, and the same is hereby remanded to the said Circuit Court, with instructions to grant a new trial.

May 4, 1896.

And afterwards, to wit: on the second day of June, 1896, the defendant in error filed its petition for a rehearing herein, which said petition is, on the nineteenth day of June, 1896, denied.

You, therefore, are hereby commanded that such further proceedings be had in said cause, as according to right and justice, and the laws of the United States, ought to be had, the said judgment notwithstanding.

Witness, the Honorable Melville W. Fuller, Chief Justice of the United States, the thirteenth day of July, in the year of our Lord, one thousand eight hundred and ninety-six

OLIVER T. MORTON,

Clerk of the United States Circuit Court of Appeals for the Seventh Circuit.

We consent that upon filing this mandate in the Circuit Court, the cause be redocketed, and notice is hereby waived.

CUSTER, GODDARD & GRIFFIN,

Attys. for Columbus Construction Co.

(Endorsed): Filed October 5, 1896.

S. W. BURNHAM, Clerk.

73 Afterwards, to wit: on the eleventh day of November, in the July term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, district judge, appears the following entry, to wit:

ORDER OF NOVEMBER 11, 1897.

Columbus Construction Company,	}	Assumpsit.
22015 vs.		
Crane Company.		

Now, on this day comes the parties, by their respective attorneys, and this cause being now called for trial, now come the following jury, to wit: D. S. Baldwin, Thomas Cornell, Edward Peters, Fred Schroeder, W. Shepard, R. E. Patton, D. V. Busse, A. T. Montgomery, Fred Pratt, F. A. Reed, Aaron Smith and James Parkes, who were all duly elected, tried and sworn to well and truly try said issue and a true verdict give according to the law and evidence, and after hearing the opening statements of counsel, and a part of evidence when the hour for adjournment arrived the further trial of this cause is postponed until tomorrow morning.

Afterwards, to wit: on the twelfth day of November, in the July term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, district judge, appears the following entry, to wit:

ORDER OF NOVEMBER 12, 1897.

Columbus Construction Company,	}	Assumpsit.
22015		
vs. Crane Company.		

74 Now come the parties, by their attorneys, and it appearing to the court that James Parkes, one of the jurors herein is sick and unable to sit further as a juror herein. It is therefore ordered by the court, no one objecting, that the jurors heretofore impaneled and sworn to try the issues in this case be discharged from the further consideration thereof, and that a jury be accordingly called, impaneled and sworn to try the issues herein. And thereupon come a new jury, to wit: D. S. Baldwin, Thomas Cornell, Edward Peters, Fred Schroeder, W. Shepard, R. E. Patton, D. V. Busse, A. F. Montgomery, Fred Pratt, F. A. Reed, Aaron Smith and H. F. Bucholz, in all twelve good and lawful men, who were all duly elected, tried and sworn to well and truly try said issue and a true verdict give according to the law and evidence, and after hearing the opening statement of counsel and a part of the evidence when the hour for adjournment arrived, the further trial of this cause is postponed until tomorrow morning.

Afterwards, to wit: on the thirteenth day of November, in the July term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, district judge, appears the following entry, to wit:

ORDER OF NOVEMBER 13, 1897.

Columbus Construction Company,	}	Assumpsit.
22015		
vs. The Crane Company.		

Now again come the parties, by their attorneys, and said jury come also, and the trial of this cause is resumed. and further  
 75 evidence being heard and not concluded when the hour for adjournment arrived the further trial of this cause is postponed until Tuesday morning next.

Afterwards, to wit: on the sixteenth day of November, in the July term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, district judge, appears the following entry, to wit:

ORDER OF NOVEMBER 16, 1897.  
Columbus Construction Company, }  
22015 vs. } Assumpsit.  
The Crane Company. }

Now again come the parties by their attorneys and come also the said jury and the hearing of this cause is resumed, and further evidence being heard and not concluded when the hour for adjournment arrived the further trial of this cause is postponed until to-morrow morning.

Afterwards, to wit: on the seventeenth day of November, in the July term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, district judge, appears the following entry to wit:

ORDER OF NOVEMBER 17, 1897.  
Columbus Construction Company, }  
22015 vs. } Assumpsit.  
The Crane Company. }

Now again come the parties, by their attorneys, and said 76 jury come also, and the trial of this cause is resumed and further evidence being heard and not concluded when the hour for adjournment arrived, the further hearing is postponed until tomorrow morning.

Afterwards, to wit: on the eighteenth day of November, in the July term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, district judge, appears the following entry, to wit:

ORDER OF NOVEMBER 18, 1897.  
Columbus Construction Company, }  
22015 vs. } Assumpsit.  
The Crane Company. }

Now again come the parties, by their attorneys, and come also the said jury, and the trial of this cause is resumed and further evi-

dence being heard and not concluded when the hour for adjournment arrived, the further hearing is postponed until tomorrow morning.

Afterwards, to wit: on the nineteenth day of November, in the July term of said court, 1897, in the record of proceedings thereof in said entitled case before the Hon. William H. Seaman, district judge, appears the following entry, to wit:

ORDER OF NOVEMBER 19, 1897.

Columbus Construction Company,	}	Assumpsit.
22015 vs.		
The Crane Company.		

Now again come the parties, by their attorneys. and said jury come also, and further evidence being heard and not concluded when the hour for adjournment arrived, the further trial of this cause is postponed until tomorrow morning.

Afterwards, to wit: on the twentieth day of November, in the July term of said court, 1897, in the record of proceedings in said entitled cause before the Hon. William H. Seaman, district judge, appears the following entry, to wit:

ORDER OF NOVEMBER 20, 1897.

Columbus Construction Company,	}	Assumpsit.
22015 vs.		
The Crane Company.		

Now again come the parties, by their attorneys, and said jury come also. and the trial of this cause is resumed, and further evidence being heard and not concluded, the further hearing is postponed until Monday morning next.

Afterwards, to wit: on the twenty-second day of November, in the July term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, district judge, appears the following entry, to wit:

ORDER OF NOVEMBER 22, 1897.

Columbus Construction Company,	}	Assumpsit.
22015 vs.		
The Crane Company.		

Now again come the parties, by their attorneys, and come

78 also the said jury, and the trial of this cause is resumed, and  
further evidence being heard and not concluded when the  
hour for adjournment arrived, the further hearing is postponed  
until tomorrow morning.

Afterwards, to wit: on the twenty-third day of November, in the July term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, district judge, appears the following entry, to wit: -

## ORDER OF NOVEMBER 23, 1897

Columbus Construction Company, }  
22015 vs } Assumpsit.  
The Crane Company. }

Now again come the parties, by their attorneys, and come also the said jurv. and the trial of this cause is resumed, and further evidence being heard, when the hour for adjournment arrived, the further trial of this cause is postponed until tomorrow morning.

Afterwards, to wit: on the twenty-fourth day of November, in the July term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, district judge, appears the following entry, to wit:

Columbus Construction Company. }  
22015 vs Assumpsit.  
The Crane Company. }

Now again come the parties, by their attorneys, and come  
79 also the said jury, and the trial of this cause is resumed, and  
further evidence being heard and not concluded when the  
hour for adjournment arrived, the further trial of this cause is  
postponed until Friday morning next.

Afterwards, to wit: on the twenty-sixth day of November, in the July term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, district judge, appears the following entry, to wit:



## ORDER OF NOVEMBER 26, 1897.

Columbus Construction Company, }  
22015 vs. } Assumpsit.  
The Crane Company. }

Now again come the parties, by their attorneys, and come also the said jury, and the trial of this cause is resumed, and further evidence being heard and not concluded when the hour for adjournment arrived, the further trial is postponed until tomorrow morning.

Afterwards, to wit: on the twenty-seventh day of November, in the July term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, district judge, appears the following entry, to wit:

## ORDER OF NOVEMBER 27, 1897.

Columbus Construction Company, }  
22015 vs. } Assumpsit  
The Crane Company. }

Now again come the parties, by their attorneys, and said jury come also, and the trial of this cause is resumed, and further evidence being heard and not concluded when the hour for adjournment arrived, the further hearing is postponed until Tuesday morning next.

Afterwards, to wit: on the thirtieth day of November, in the July term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, district judge, appears the following entry, to wit:

## ORDER OF NOVEMBER 30, 1897.

Columbus Construction Company, }  
22015 vs. } Assumpsit  
The Crane Company. }

Now again come the parties, by their attorneys, and come also the said jury, and the trial of this cause is resumed, and further evidence being heard and not concluded when the hour for adjournment arrived, the further trial of this cause is postponed until tomorrow morning.

Afterwards, to wit: on the first day of December, in the July term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, district judge, appears the following entry, to wit:

ORDER OF DECEMBER 1, 1897.

Columbus Construction Company,	}	Assumpsit.
22015 vs.		
The Crane Company.		

Now again come the parties, by their attorneys, and said jury come also, and the trial of this cause is resumed, and further evidence being heard and not concluded when the hour for adjournment arrived, the further trial of this cause is postponed until tomorrow morning.

Afterwards, to wit: on the second day of December, in the July term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, district judge, appears the following entry, to wit:

ORDER OF DECEMBER 2, 1897

Columbus Construction Company,	}	Assumpsit
22015 vs.		
The Crane Company.		

Now again come the parties, by their attorneys, and said jury come also, and the trial of this cause is resumed, and further evidence being heard and not concluded when the hour for adjournment arrived, the further trial of this cause is postponed until to-morrow morning.

Afterwards, to wit: on the third day of December, in the July term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, District Judge, appears the following entry, to wit:

## ORDER OF DECEMBER 3, 1897.

Columbus Construction Company	}	Assumpsit
22015 vs.		
The Crane Company.		

Now again come the parties, by their attorneys, and come  
82 also the said jury, and the trial of this cause is resumed, and  
further evidence being heard and not concluded when the  
hour for adjournment arrived, the further trial of this cause is  
postponed until to-morrow morning.

Afterwards, to wit: on the fourth day of December, in the July  
term of said court, 1897, in the record of proceedings thereof in  
said entitled cause before the Hon. William H. Seaman, District  
Judge, appears the following entry, to wit:

## ORDER OF DECEMBER 4, 1897.

The Columbus Construction Company	}	Assumpsit
22015 vs.		
The Crane Company.		

Now again come the parties, by their attorneys, and come also  
the said jury, and the trial of this cause is resumed, and further  
evidence being heard and not concluded when the hour for ad-  
journment having arrived, the further trial of this cause is post-  
poned until Monday morning next.

Afterwards, to wit: on the sixth day of December, in the July  
term of said court, 1897, in the record of proceedings thereof in  
said entitled cause before the Hon. William H. Seaman, District  
Judge, appears the following entry, to wit:

## ORDER OF DECEMBER 6, 1897.

Columbus Construction Co.	}	Assumpsit
22015 vs.		
The Crane Company.		

Now again come the parties, by their attorneys, and come  
83 also the said jury, and the trial of this cause is resumed, and  
further evidence being heard and not concluded when the  
hour for adjournment arrived, the further trial of this cause is  
postponed until to-morrow morning.

Afterwards, to wit: on the seventh day of December, 1897, in the July term of said court, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, District Judge, appears the following entry, to wit:

ORDER OF DECEMBER 7, 1897.

The Columbus Construction Co.	}	Assumpsit
22015 vs.		
The Crane Company.		

Now again come the parties, by their attorneys, and come also the said jury, and the trial of this cause is resumed. and further evidence being heard on the part of the defendant and not being concluded when the hour for adjournment arrived, the further trial of this cause is postponed until to-morrow morning

Afterwards, to wit; on the eighth day of December. in the July term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, District Judge, appears the following entry, to wit:

ORDER OF DECEMBER 8. 1897.

The Columbus Construction Co.	}	Assumpsit.
22015 vs.		
The Crane Company		

84 Now again come the parties, by their attorneys. and come also the said jury, and the trial of this cause is resumed, and further evidence being heard on behalf of the defendant and not concluded when the hour for adjournment arrived, the further hearing is postponed until to-morrow morning.

Afterwards, to wit: on the ninth day of December. in the July term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, District Judge, appears the following entry, to wit:

## ORDER OF DECEMBER 9, 1897.

The Columbus Construction Co. }  
22015                    vs.                    } Assumpsit  
The Crane Company. }

Now again come the parties, by their attorneys, and come also the said jury, and the trial of this cause is resumed, and further evidence being heard on behalf of the defendant and not being concluded when the hour for adjournment arrived, the further hearing is postponed until to-morrow morning.

Afterwards, to wit: on the tenth day of December, in the July term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, District Judge, appears the following entry, to wit:

## ORDER OF DECEMBER 10, 1897.

The Columbus Construction Co. }  
22015                    vs.                    } Assumpsit.  
The Crane Company. }

85 Now again come the parties, by their attorneys, and said jury come also, and the trial of this cause is resumed, and further evidence being heard and not concluded when the hour for adjournment arrived, the further hearing is postponed until to-morrow morning.

Afterwards, to wit: on the eleventh day of December, in the July term of said court, 1897, in the record of proceedings thereof before the Hon. William H. Seaman, District Judge, appears the following entry, to wit:

## ORDER OF DECEMBER 11, 1897.

The Columbus Construction Co. }  
22015                    vs.                    } Assumpsit.  
The Crane Company. }

Now again come the parties, by their attorneys, and come also the said jury, and the trial of this cause is resumed, and further evidence being heard and not concluded when the hour for adjourn-

ment arrived, the further hearing is postponed until Monday morning next.

Afterwards, to wit: on the thirteenth day of December, in the July term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, District Judge, appears the following entry, to wit:

ORDER OF DECEMBER 13. 1897.

The Columbus Construction Co.	}	Assumpsit.
22015                      vs.		
The Crane Company.		

86 Now again come the parties, by their attorneys, and said jury come also, and the trial of this cause is resumed, and further evidence being heard and not concluded when the hour for adjournment arrived, the further trial of this cause is postponed until to-morrow morning.

Afterwards, to wit: on the fourteenth day of December, in the July term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, District Judge, appears the following entry, to wit:

ORDER OF DECEMBER 14. 1897.

Columbus Construction Co.	}	Assumpsit.
22015                      vs.		
The Crane Company.		

Now again come the parties, by their attorneys, and come also the said jury, and the trial of this cause is resumed and further evidence being heard on behalf of the defendant and not concluded when the hour for adjournment arrived the further hearing is postponed until tomorrow morning.

Afterwards, to wit: on the fifteenth day of December, in the July term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, District Judge, appears the following entry, to wit:

# ORDER OF DECEMBER 15, 1897.

Columbus Construction Company	}	Assumpsit.
22015                      vs.		
The Crane Company.		

Now again come the parties, by their attorneys, and come also the said jury, and the trial of this cause is resumed, and leave is given the defendant to file amendment to plea instant. And further evidence being heard and not concluded when the hour for adjournment arrived, the further hearing is postponed until to-morrow morning.

And on the fifteenth day of December, 1897, came the defendant, by its attorney, and by leave of court first had and obtained filed in the clerk's office of said court its amendment to its plea and notice of set-off, which said amendment is in the words and figures following, to wit:

# AMENDMENT TO PLEA AND NOTICE OF SET-OFF.

United States of America,

ss.

Northern District of Illinois.

In the Circuit Court of said District.

Columbus Construction Company	}	No. 22015.
vs.		
Crane Company.		

Now comes the defendant, by its counsel, and by leave of court first had and obtained, amends its plea and notice of set-off filed herein on the 16th day of June, 1893, in the following particulars, to wit:

1. By adding to said notice of set-off, on the 4th page thereof, after the words, "That said plaintiff failed and neglected to

properly lay said pipe and to make suitable tests thereof with reasonable promptness," the following:

"That although the defendant was at all times able, ready and willing to perform said contract on its part, the plaintiff neglected and refused to perform the same on its part, and on, to wit: the 12th day of February, 1891, the plaintiff notified the defendant that it would not perform said contract, and unlawfully and wrongfully broke, canceled and repudiated said contract, retaining, however, the pipe which had theretofore been delivered by the defendant."

2. By striking out, on the 4th page of said notice, the following words, to wit: "The defendant was unable to pay the various manufacturers, with whom it had contracted as aforesaid, the amounts due them, respectively, for pipe delivered as provided in the contract, and was unable to secure from them the further performance of their respective contracts to manufacture. That by reason of the inability and failure of the defendant to make such payment," and by inserting in lieu thereof the following:

"And by reason of the wrongful breach and repudiation of said contract by the plaintiff and the plaintiff's refusal to receive further performance of said contract on the part of the defendant and from the manufacturers of said pipe."

WING, CHADBOURNE & LEACH,  
WILLIAMS, HOLT & WHEELER,  
Attys. for Deft.

(Endorsed): Filed Dec. 15, 1897.

S. W. BURNHAM, Clerk.

90 Afterwards, to wit: on the sixteenth day of December, in the July term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, District Judge, appears the following entry, to wit:

ORDER OF DECEMBER 16, 1897.

Columbus Construction Co.	}	Assumpsit.
22015 vs.		
The Crane Company.		

Now again come the parties, by their attorneys, and said jury come also, and the trial of this cause is resumed, and further evidence being heard and not concluded when the hour for adjournment arrived, the further trial is postponed until to-morrow morning.



Afterwards, to wit: on the seventeenth day of December, in the July term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, District Judge, appears the following entry, to wit:

ORDER OF DECEMBER 17. 1897.

Columbus Construction Co. }  
22015 vs. } Assumpsit.  
The Crane Company. }

Now again come the parties, by their attorneys, and come also said jury, and the trial of this cause is resumed, and further evidence being heard and not concluded when the hour for adjournment arrived, the further hearing is postponed until to-morrow morning.

Afterwards, to wit: on the eighteenth day of December, in the July term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, District Judge, appears the following entry, to wit:

ORDER OF DECEMBER 18. 1897.

Columbus Construction Co. }  
22015 vs. } Assumpsit.  
The Crane Company. }

Now again come the parties, by their attorneys, and come also the said jury, and the trial of this cause is resumed. and further evidence being heard and not concluded when the hour for adjournment arrived, the further trial of this cause is postponed until Monday morning next.

Afterwards, to wit: on the twentieth day of December, in the December term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, District Judge, appears the following entry, to wit:

ORDER OF DECEMBER 20, 1897.

Columbus Construction Co. }  
 22015 vs. } Assumpsit.  
 The Crane Company. }

Now again come the parties, by their attorneys, and come also the said jury, and the trial of this cause is resumed, and  
 92 further evidence being heard and not concluded when the hour for adjournment arrived, the further hearing is postponed until to-morrow morning.

Afterwards, to wit: on the twenty-first day of December, in the December term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, District Judge, appears the following entry, to wit.

ORDER OF DECEMBER 21, 1897.

Columbus Construction Co. }  
 22015 vs. } Assumpsit.  
 The Crane Company. }

Now again come the parties, by their attorneys, and come also the said jury, and the trial of this cause is resumed, and further evidence being heard and not concluded when the hour for adjournment arrived, the further hearing is postponed until to-morrow morning.

Afterwards, to wit: on the twenty-second day of December, in the December term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, District Judge, appears the following entry, to wit.

ORDER OF DECEMBER 22, 1897.

The Columbus Construction Co. }  
 22015 vs. } Assumpsit.  
 The Crane Company. }

Now again come the parties, by their attorneys, and said jury  
 93 come also, and the trial of this cause is resumed, and further evidence being heard and not concluded when the hour for adjournment arrived, the further hearing is postponed until to-morrow morning.

Afterward, to wit: on the twenty-third day of December, in the December term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, District Judge, appears the following entry, to wit:

ORDER OF DECEMBER 23, 1897.

Columbus Construction Co.	}	Assumpsit.
22015 vs.		
The Crane Company.		

Now again come the parties, by their attorneys, and come also the said jury, and the trial of this cause is resumed, and further arguments being heard and not concluded when the hour for adjournment arrived, the further hearing is postponed until tomorrow morning.

Afterwards, to wit: on the twenty-fourth day of December, in the December term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, District Judge, appears the following entry, to wit:

ORDER OF DECEMBER 24, 1897.

Columbus Construction Co.	}	Assumpsit.
22015 vs.		
The Crane Company.		

Now again come the parties, by their attorneys, and come also the said jury, and the trial of this cause is resumed, and further arguments being heard and not concluded when the hour for adjournment arrived, the further hearing is postponed until Monday morning next.

Afterwards, to wit: on the twenty-seventh day of December, in the December term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, District Judge, appears the following entry, to wit:

## ORDER OF DECEMBER 27. 1897.

Columbus Construction Company }  
22015                    vs                    }    Assumpsit  
The Crane Company.                    }

Now again come the parties, by their attorneys, and come also the said jury, and further arguments being heard and not concluded when the hour for adjournment arrived, the further hearing is postponed until to-morrow morning.

Afterwards, to wit: on the twenty-eighth day of December, in the December term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, District Judge, appears the following entry, to wit:

## ORDER OF DECEMBER 28. 1897.

Columbus Construction Co. }  
22015                    vs.                    }    Assumpsit.  
The Crane Company.                    }

Now again come the parties, by their attorneys, and come also the said jury, and the hearing of arguments are resumed and  
95 not being concluded when the hour for adjournment arrived, the further hearing is postponed until to-morrow morning.

Afterwards, to wit: on the twenty-ninth day of December, in the December term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, District Judge, appears the following entry, to wit:

## ORDER OF DECEMBER 29. 1897.

The Columbus Construction Co. }  
22015                    vs                    }    Assumpsit  
The Crane Company.                    }

Now again come the parties, by their attorneys, and come also the said jury, and the hearing of arguments is resumed, and the same being now heard to conclusion, said jury is charged and instructed by the court and retire to deliberate upon a verdict, with directions to sign and seal the same and deliver the same to the bailiff in charge when they shall have reached a conclusion, if the court is not then in session.

second  
Dec.

Afterwards, to wit: on the thirtieth day of December, in the December term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, District Judge, appears the following entry, to wit:

ORDER OF DECEMBER 30, 1897.

Columbus Construction Company	}	Assumpsit
22015                      vs.		
The Crane Company.		

Now again come the parties, by their attorneys, and said jury come also and return into open court their verdict, which is in the following words and figures, to wit: "We, the jury, find the issues for the defendant and assess its damages at the sum of ninety-eight thousand eighty-five dollars and ninety-four cents (\$98,085.94). Aaron Smith, foreman." And thereupon said jury is polled, and as their names are called each answered that such was and is his verdict, and thereupon the plaintiff, by its attorney, enters its motion for a new trial.

March

97 Afterwards, to wit: on the second day of March, 1898, in the December term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. William H. Seaman, District Judge, appears the following entry, to wit:

ORDER OF MARCH 2, 1898.

Columbus Construction Company	}	Assumpsit
22015                      vs		
The Crane Company.		

Now on this day come the parties, by their attorneys, and now comes on to be heard the motion of the plaintiff for a new trial, and the court having heard the same to conclusion and being now fully advised in the premises, overrules said motion and awards judgment on the verdict, to which ruling the plaintiff excepts.

It is thereupon considered and adjudged by the court that the defendant have and recover of the plaintiff the said sum of ninety-eight thousand and eighty-five dollars and ninety-four cents, the amount of the damages assessed by the jury herein on the thirtieth day of December, 1897, with interest thereon from said date, amounting to the sum of ninety-eight thousand eight hundred

and thirty-two dollars and thirty-two cents, together with the costs herein to be taxed, and that the defendant have execution therefor. and the plaintiff has sixty days to file bill of exceptions.

98 On the thirteenth day of April, 1898, in the December term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. John W. Showalter, Circuit Judge, appears the following entry, to wit:

### ORDER OF APRIL 13, 1898.

Columbus Construction Co	}	Assumpsit.
22015 vs.		
The Crane Company.		

Now on this day come the parties, by their attorneys, and upon stipulation filed, it is ordered that the time for the plaintiff to file bill of exceptions herein be and the same is hereby extended to and including July 1, 1898.

And on the twenty-second day of June, 1898, came the parties in said entitled cause, by their respective attorneys, and filed in the clerk's office of said court a certain stipulation, which said stipulation is in words and figures following, to wit:

### STIPULATION.

In the Circuit Court of the United States, Northern District of Illinois, Northern Division. General No. 22015.

Columbus Construction Company	
vs.	Assumpsit
Crane Company.	

Term No. 310.

It is hereby stipulated and agreed that the time for presenting, signing and filing a bill of exceptions in the above entitled cause may be extended to the first day of September. A. D. 1898, and that an order of court may be entered in accordance with this stipulation.

WING, CHADBOURNE & LEACH,  
CUSTER, GODDARD & GRIFFIN.

(Endorsed): Filed Jun. 22, 1898.

S. W. BURNHAM, Clerk.

99 And on the same day, to wit: June 22, 1898, in the December term of said court, 1897, in the record of proceedings thereof in said entitled cause before the Hon. John W. Showalter, Circuit Judge, appears the following entry, to wit:

Columbus Construction Co.

22015

vs.

Assumpsit.

The Crane Company.

Now on this day come the parties, by their attorneys, and upon motion of the plaintiff, and upon stipulation filed, the time to file bill of exceptions herein is extended to September 1st, next.

101 On the hearing of this cause the following exceptions were taken and were allowed by the court and made of record, which said exceptions are in the words and figures following, to wit:

#### BILL OF EXCEPTIONS.

102 United States of America,

ss.

Northern District of Illinois.

In the Circuit Court in and for said District.  
July Term, A. D. 1898.

Columbus Construction Company

vs.

Crane Company.

Messrs. Custer, Goddard & Griffin, Mr. S. S. Gregory and Mr. George Hunt, appearing on behalf of the plaintiff.

Mr. Charles S. Holt, Mr. R. M. Wing and Mr. Thomas L. Chadbourne, Jr., appearing on behalf of the defendant.

#### BILL OF EXCEPTIONS.

Be it remembered, that heretofore, to wit: on the 12th day of November, 1897, being one of the days of the July term, 1897, of said court, before the Honorable William H. Seaman, one of the judges of said court, presiding, and a jury, this cause came on for trial upon the issues heretofore joined herein

And thereupon the plaintiff, to maintain the issues on its part, introduced the following testimony, to wit:

The agreement between the plaintiff and the defendant, dated June 28, 1890, with the exhibits hereto attached, referred to in the contract as Exhibits A and B, together with a further paper attached to the agreement, which agreement is marked "Plaintiff's Ex. A," and which said exhibits and paper attached are in the words and figures, as follows:

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## PLAINTIFF'S EXHIBIT A.

Plaintiff's  
Ex. A.

This agreement made this twenty-eighth day of June, A. D. 1890, between the Columbus Construction Company, a corporation existing under and by virtue of the laws of the State of New Jersey, party of the first part, and the Crane Company, a corporation existing under and by virtue of the laws of the State of Illinois, party of the second part,

Witnesseth, That for and in consideration of the facilities and representations of the party of the second part, more fully shown by "Exhibit A," hereto attached and made part hereof, to effect for the party of the first part upon desirable terms the purchase of the standard wrought iron line pipe hereinafter specified, and the sum of one dollar in hand paid by each of the parties hereto, the one to the other, the receipt whereof is hereby mutually acknowledged, it is agreed between the parties hereto as follows, to wit:

The party of the second part will purchase in its own name and upon its own credit, as the agent irrevocable of the party of the first part, and secure the delivery to the party of the first part during the months of July, August and September, as hereinafter specified, at such place as may be designated hereafter by the party of the first part, at the earliest practicable dates, but not later than October 1, 1890, barring strikes and causes beyond control, for the lowest obtainable price (which price shall include freights to the point of delivery, same not to exceed the current rate of freight from point of shipment to Chicago), and the party of the first part will take all the wrought iron standard line pipe hereinafter specified in conformity with the specifications and subject to the conditions and tests more fully set forth and specified in the contract and specifications for standard 8-inch line pipe, hereunto attached, subject, however, to change as to size and weight as hereinafter stated, marked "Exhibit B," hereunto attached and made part hereof, at a price, including commission, to be paid party of the second part, of two and one-half ( $2\frac{1}{2}$ ) per cent., not exceeding ninety-one cents (91) per lineal foot for eight (8) inch standard line pipe, and price on the following sizes to be in proportion to price given on eight-inch as above, and as hereinafter specified,        cents per lineal foot for



ten-inch standard line pipe,            cents per lineal foot for six-inch  
 standard line pipe,            cents per lineal foot for four-inch standard  
 line pipe,            cents per lineal foot for three-inch line pipe,  
 cents per lineal foot for five and five-eighths (5 5-8) standard  
 casing.

104 260 miles of 8-inch wrought iron standard line pipe to weigh  
 not less than 27.48 pounds per lineal foot.

10 to 20 miles of 10-inch wrought iron standard line pipe to  
 weigh not less than 39 pounds per lineal foot exclusive of weight of  
 collar.

10 to 20 miles of 6-inch wrought iron standard line pipe to  
 weigh not less than 18.29 pounds per lineal foot exclusive of weight  
 of collar.

10 to 20 miles of 4-inch wrought iron standard line pipe to  
 weigh not less than 10.39 pounds per lineal foot exclusive of weight  
 of collar.

10 to 20 miles of 3-inch wrought iron standard line pipe to  
 weigh not less than 7.35 pounds per lineal foot exclusive of weight  
 of collar.

6,000 feet of 5 5-8 wrought iron standard casing.

It being the intent and purpose hereof that the party of the  
 first part shall have the right during the running of this agreement  
 to take so much of the 10, 6, 4 and 3-inch pipe over and above the  
 ten miles hereinbefore specified (but in amount not exceeding twenty  
 miles of each size specified, eight-inch excepted), as it may hereafter  
 designate.

The party of the second part will, barring strikes and causes  
 beyond their control, deliver all the eight-inch pipe before mentioned  
 in amount not less than 37 miles in July, not less than 123 miles in  
 August, and all the remaining undelivered, in September, 1890, prior  
 to the 15th of September, if possible.

The party of the first part agrees to pay to the party of the  
 second part upon delivery of each and every invoice of pipe at such  
 delivery points as the party of the first part shall designate spot  
 cash therefor, including commission of two and one-half ( $2\frac{1}{2}$ ) per  
 cent. over and above the amount of each original invoice rendered  
 party of the second part by the manufacturer, but in no case agree-  
 ing to pay any sum or sums in excess of (including pipe freight and  
 commission or other charge) the prices hereinbefore fixed for each  
 size of pipe.

In witness whereof, the parties hereto have caused this instru-  
 ment to be executed in duplicate by their respective presidents, and

attested by their respective secretaries, under their respective corporate seals, this 30th day of June, 1890. Pla  
A

COLUMBUS CONSTRUCTION COMPANY,

By C. E. HEQUEMBOURG, *President*.

Attest:

[CORPORATE SEAL OF COLUMBUS CON. CO.]

C. K. WOOSTER,

*Secretary of Columbus Construction Company.*

CRANE COMPANY,

R. T. CRANE, *President*.

Attest:

[CORPORATE SEAL OF CRANE CO.]

GEO. L. FORMAN,

*Secretary of the Crane Company.*

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NEW YORK, June, 1890.

The within contract is hereby approved by the subscribers, the holders of the majority of all the stock of the Columbus Construction Company outstanding at this date, pursuant to Section 1, Article 2 of the by-laws of the Columbus Construction Company.

(Signed)

E. C. BENEDICT.

(Signed)

CHAS. T. YERKES.

"EXHIBIT A."

(Copy.)

CHICAGO, June 20, 1890.

C. E. Hequembourg, *Esq.*.

DEAR SIR: As members of the Pipe Association with a representative on the board of managers, we feel confident of our ability, in fact know, that we can purchase the pipe in question at least five per cent less than any outsider. Especially is this true in the face of the legislation enacted by the board of managers at a meeting held in Pittsburg, on Wednesday, the 18th inst., at which meeting it was agreed that cash forfeits of large amounts be put up, the same to be forfeited in the event of the agreed price being cut. Exh

It will be necessary for the board of managers to take special legislation, in effect, to throw the market open in the interest of our company, to enable us to secure the material wanted at a price satisfactory to you, and acting merely as your agent the price made us would naturally be yours.

Our position in the association is such that we feel confident of bringing this about.

Should you have sufficient confidence in our company to appoint us your agents in this matter, the actual placing of the order,

inter. in itself quite a task to our minds, would be only the beginning of a large line of work that we would necessarily be called upon to do for you in the handling of a dozen mills, more or less, that would have to participate in the participation of such an order. In consequence of which, we think in tendering our services to you as we do, that  $2\frac{1}{2}$  per cent. brokerage would only be a reasonable charge.

Should you decide to accept our offer, your wishes will be our instruction.

Very respectfully yours,  
 (Signed) CRANE COMPANY,  
 GEO. L. FORMAN, *Secretary.*

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## "EXHIBIT B."

This agreement made and entered into the \_\_\_\_\_ day of \_\_\_\_\_ by and between \_\_\_\_\_, party of the first part and the \_\_\_\_\_ party of the second part,

Witnesseth: That the said party of the first part, for and in consideration of one dollar to it in hand well and truly paid by the party of the second part, at and before the sealing and delivery hereof, the receipt of which is hereby acknowledged, and of the payments hereinafter mentioned to be made by the said party of the second part, has covenanted and agreed, and by these presents does covenant and agree:

*First:* To furnish and deliver to the said party of the second part \_\_\_\_\_ miles of eight-inch standard nominal weight line pipe made from soft iron, free from blisters and other imperfections, and guaranteed to stand a working line pressure of one thousand pounds to the square inch, when proved and tested in line as hereinafter provided.

*Second:* This pipe is to be eight-inch standard line pipe, and no single joint of the said pipe shall weigh less than 27.48 pounds to the lineal foot.

*Third:* That no more than five (5) spliced joints shall be included in any one car-load, and that each spliced joint shall weigh the weight of the collar in addition to the weight herein contracted for.

*Fourth:* That each joint of pipe furnished under this contract shall have eight threads to the inch, and at least two inches of thread on each end, and that full uniform taper shall be given to the thread both on the pipe and in the collar.

*Fifth:* That it will commence not later than \_\_\_\_\_ and will on said day, and on each working day thereafter, deliver to the

*Exhibit B.—Agreement.*

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railway company for transportation to the party of the second part at railway stations in at least an average of miles of pipe until the whole amount of pipe herein contracted for is delivered, which shall not be later than , barring strikes and causes beyond our control.

*Sixth:* That it will pay all freight and other charges for the transportation of said pipe from its mills to destination as above.

*Seventh:* That it will pay to the party of the second part all damage, and expenses of every kind which second party shall sustain by reason of any defect or defects in the pipe delivered up to 107 and including the time when said pipe is tested by second party under working pressure not in excess of one thousand (1,000) pounds to the square inch, and proved tight in the line, which working test shall be made with reasonable promptness. And

*Eighth:* That it will pay to the party of the second part, as liquidation damages, the sum of fifty (\$50) dollars per day for each and every day after said and until the amount of pipe agreed to be furnished as above provided has been furnished, and second party may deduct the amount of such damages from any money in its hands due first party for pipe furnished under this contract.

In consideration of the premises, the said party of the second part covenants and agrees to pay to the party of the first part the sum of per foot for each and every foot of pipe received by it under this contract, said payments to be made on each car-load of pipe within fifteen days after the receipt of the same, unless counterbalanced by damages due to second party.

It is expressly understood and agreed by and between the parties hereto, that the representatives of second party at first party's mill is there only for the purpose of seeing that the said pipe comes up to the guaranteed weight, and that the threads and sockets are not manifestly defective, and said pipe shall not be construed to be accepted by second party by reason of any payments made therefor, so as to relieve first party from liability on account of its defective character until the same has been laid and tested in the line and proved.

In witness whereof, the parties to this agreement have hereunto set their hands and seals, the day and year first above written.

108 CHARLES E. HEQUEMBOURG, a witness on behalf of the plaintiff, being first duly sworn, testified in substance as follows:

I live at Dunkirk, New York. In 1890, was a civil engineer and president of Columbus Construction Company. I had to do with making the contract here in suit. An approximate estimate was handed me by George L. Forman, secretary of Crane Company, two or three days after the delivery of that contract. Forman said, this is the price, approximately, at which the 8, 10, 6, 4 and 3 inch pipe will be furnished. It will not exceed the prices here. It may be less.

Counsel for plaintiff then offered in evidence the paper headed "Approximate Estimate" (Plaintiff's Exhibit "C") to which the defendant objected.

The court overruled said objection and admitted the paper, to which counsel for the defendant then and there duly excepted. Said paper is in words and figures as follows:

#### PLAINTIFF'S EXHIBIT "C."

##### Approximate estimate.

Page Tube Co.....	60 miles,	316,800 ft. at	88.6 cents.	
National Tube Wks. Co.	60	" 316,800 ft. at	88.5	"
Pittsburg Tube Co.....	40	" 211,200 ft. at	88.5	"
Reading Iron Co.....	40	" 211,200 ft. at	88	"
Morris, Tasker & Co....	20	" 105,600 ft. at	88	"
Spang, Chalfant & Co....	20	" 105,600 ft. at	88	"
American Tube & Iron Co.	20	" 105,600 ft. at	88	"
<hr/>				
1,372,800 ft. at 88.33 cents.				
				\$1,179,594.24
3" 10 miles	52,800 ft. at about	.22	\$11,616.00	
4" 10 miles	52,800 ft. at about	.30	15,840.00	
6" 10 miles	52,800 ft. at about	.55	29,040.00	
10" 10 miles	52,800 ft. at about	1.30	68,640.00	125,136.00
<hr/>				
				\$1,304,730.24

Plaintiff offered in evidence the following papers marked respectively plaintiff's Exhibit D1 to D12 inclusive, E, F, G, H, J1 to J6, inclusive, K, L and M.

*Plaintiff's Exhibits.*

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## PLAINTIFF'S EXHIBIT D1.

Plaintiff's  
Exhibits

Columbus Construction Company.

Chicago Office, 138 Washington St., Rooms 915, 916, 917.

Copy.

CHICAGO, July 23rd, 1890.

*Crane Company, City.*

GENTLEMEN: Please deliver on account of our contract with your company the following 8-inch standard line pipe, each joint to be plainly marked with maker's name, length in feet and inches and weight in pounds at the following railroad points, filling each station in order given as follows:

62,040 lineal feet at Vermont, Indiana, on the Toledo, St. Louis and Kansas City Railroad.

75,680 feet at Bennett's Switch, Indiana, on the Lake Erie & Western Railroad.

38,280 lineal feet at Lincoln, Indiana, on the Chicago, St. Louis & Pittsburgh R. R.

60,720 lineal feet at Walton, Indiana, on the Chicago, St. Louis & Pittsburgh R. R.

18,480 feet at Anoka, Indiana, on the Chicago, St. Louis & Pittsburgh R. R. and notify us at once when deliveries may be expected.

Yours truly,

(Signed) C. E. HEQUEMBOURG, *President.*

D2.

Plaintiff's  
Exhibits

Columbus Construction Company,

Chicago Office, 138 Washington St., Rooms 915, 916, 917.

Copy.

CHICAGO, July 23rd, 1890.

*Crane Company, City.*

GENTLEMEN: Please deliver on account of our contract with your company, the following 6 and 4-inch pipe, each joint to be plainly marked with the maker's name, length in feet and inches, and weight in pounds.

1,500 feet each 6 and 4-inch pipe at Ainsworth, Indiana, a station on the Chicago & Grand Trunk R. R.

1,500 feet each 6 and 4-inch pipe at Winamac, Indiana, a station on the Chicago, St. Louis & Pittsburgh R. R. and notify us at once when delivery may be expected.

Yours truly,

(Signed) C. E. HEQUEMBOURG, *President.*

110

D3.

Columbus Construction Company.

Chicago Office, 138 Washington St., Rooms 915, 916, 917.

Copy.

CHICAGO, July 23rd, 1890.

*Crane Company, City.*

GENTLEMEN: Please deliver on account of our contract with your company the following Standard line pipe at Greentown, Indiana, a station on the Toledo, St. Louis, and Kansas City Ry, each joint to be plainly marked with the maker's name, length in feet and inches and weight in pounds.

5 miles 10 inch.

5 miles 6 "

5 miles 4 "

5 miles 3 "

and notify us at once when delivery may be expected.

Yours truly,

(Signed) C. E. HEQUEMBOURG, *President.*

D4.

Columbus Construction Company,

Chicago Office, 138 Washington St., Rooms 915, 916, 917.

Copy.

CHICAGO, July 31st, 1890.

Copy.

*Crane Company, City.*

GENTLEMEN: Please deliver on account of our contract with your company the following 5 5-8 standard casing, each joint to be plainly marked with maker's name, the length in feet and inches, 6,000 feet at Greentown, Indiana, a station on the Toledo, St. Louis & Kansas City Ry., and notify us at once when delivery may be expected.

Yours truly,

(Signed) C. E. HEQUEMBOURG, *President.*

111

D5.

Columbus Construction Company,

Chicago office, 138 Washington St., Rooms 915, 916, 917.

Copy.

CHICAGO, August 9, 1890.

*Crane Company, Chicago.*

GENTLEMEN: You are hereby authorized to respect the delivery orders of the Consumers' Gas Company for twenty-six miles of

Standard 8-inch pipe, which they will receive on account of our contract with you, they having made arrangements with us to take and pay you for the same.

We will, of course, guarantee the payment of same, as per terms of our contract with you.

Yours truly,

(Signed)

C. E. HEQUEMBOURG,

*President.*

D6.

Columbus Construction Company.

Chicago office, 138 Washington St., Rooms 915, 916, 917.

Copy.

CHICAGO, August 9, 1890.

*The Crane Company, Chicago.*

GENTLEMEN: Please deliver on account of our contract with your company the following 8-inch standard line pipe, each joint to be plainly marked with the maker's name, length in feet and inches, and weight in pounds, at the following railroad points filling each station in order given as follows:

77,880 lineal feet at Ainsworth, Indiana, on the Chicago & Grand Trunk R. R.

7,260 lineal feet at Hobart, Indiana, on the Grand Trunk & Fort Wayne Ry.

41,140 lineal feet at Liverpool, Indiana, on the Ft. Wayne Ry.

30,580 lineal feet at Tolleston, Indiana, on the Fort Wayne & Michigan Central Ry., and notify us at once when deliveries may be expected.

Yours truly,

(Signed)

C. E. HEQUEMBOURG,

*President.*

112

D7.

Columbus Construction Company.

Chicago office, 138 Washington St., Rooms 915, 916, 917.

Copy.

CHICAGO, August 20, 1890.

*Messrs. Crane Co., City.*

GENTLEMEN: Please deliver on account of our contract with your company, the following standard line pipe to Swayzee, Indiana, a station on the Toledo, St. Louis & Kansas City Ry.:

5 miles of 10-inch pipe

5 miles of 6-inch pipe

5 miles of 4-inch pipe

5 miles of 3-inch pipe

and notify us at once when delivery may be expected.



The joints to be plainly marked with maker's name, length in feet and inches and weight in pounds.

Yours truly,

(Signed) C. E. HEQUEMBOURG,  
*President.*

PLAINTIFF'S EXHIBIT " D 8."

Columbus Construction Company,  
Chicago office, 138 Washington St., Rooms 915, 916, 917.

Copy.

CHICAGO, August 21, 1890.

*The Crane Company, City.*

DEAR SIRs: Please deliver on account of our contract with your company the following 8-inch standard line pipe, each joint to be plainly marked with maker's name, length in feet and inches, and weight in pounds, at the following railroad points filling each station in order given as follows:

18,590 lineal feet at Clanricarde, Indiana, on the Chicago & Atlantic R. R.

59,950 feet at Wilders Station, Indiana, on the Chicago & Atlantic R. R., and notify us at once when deliveries may be expected.

Yours truly,

(Signed) C. E. HEQUEMBOURG,  
*President.*

D9.

113

Columbus Construction Company,

Chicago Office, 138 Washington St., Rooms 915, 916, 917.

Copy.

CHICAGO, Sept. 9th, 1890.

*Crane Company, City.*

GENTLEMEN: Please deliver on account of our contract with your company the following standard line pipe, each joint to be plainly marked with maker's name, length in feet and inches, and weight in pounds:

31,240 feet at Sedley, Indiana, a station on the Chicago & Grand Trunk Ry.

Yours truly,

(Signed) C. E. HEQUEMBOURG, *President.*

D10.

Columbus Construction Company,  
Chicago Office, 138 Washington St., Rooms 915, 916, 917.

Copy.

CHICAGO, Sept. 12th, 1890.

*The Crane Co., Chicago.*

DEAR SIR: Please deliver on account of our contract with your company the following 8-inch standard pipe, each joint to be plainly marked with the maker's name, length in feet and inches, and weight in pounds at the following railroad points:

45,540 lineal feet at Clarke, Indiana, on the Fort Wayne Ry., and notify us at once when delivery may be expected.

Yours truly,

(Signed) C. E. HEQUEMBOURG, *President.*

By J. S. SMITH.

D11.

Columbus Construction Company,  
Chicago Office, 138 Washington St., Rooms 915, 916, 917.

Copy.

CHICAGO, Sept. 20th, 1890.

*Messrs Crane Co., City.*

GENTLEMEN: Please deliver on account of our contract with your company the following standard line pipe, each joint to be plainly marked with maker's name, length in feet and inches, and weight in pounds.

3,300 feet at Logansport, Indiana, on the Chicago, St. Louis & Pittsburgh Ry.

1,000 feet at Winamac, Indiana, on the Chicago, St. Louis & Pittsburgh Ry.

4,000 feet at Verona, Indiana, on the Terre Haute & Indianapolis Ry.

Yours very truly,

(Signed) C. E. HEQUEMBOURG, *President.*

114

D12.

Columbus Construction Company,  
Chicago Office, 138 Washington St., Rooms 915, 916, and 917.

Copy.

CHICAGO, Sept. 23rd, 1890.

*Messrs. Crane & Co., City.*

GENTLEMEN: Please deliver on account of our contract with your company the following 8-inch standard line pipe, each joint to

*Bill of Exceptions.*

be marked with maker's name, length in feet and inches, and weight in pounds.

17,056 feet at East Chicago, on the Pittsburgh, Ft. Wayne and Chicago.

38,210 feet at Whiting, on the Baltimore & Ohio and Lake Shore & Michigan Southern Ry.

Yours very truly,

(Signed) C. E. HEQUEMBOURG, *President.*

## PLAINTIFF'S EXHIBIT "E."

Copy.

JULY 18, 1890.

*Crane Company, 10 North Jefferson St., City.*

GENTLEMEN: Please make deliveries of cars of pipe to be consigned to this company as follows:

Colehour Station.....	8 cars.
100th Street.....	8 cars.
South Chicago.....	15 cars.
Constance.....	4 cars.
Grand Crossing.....	20 cars.
Brookline.....	8 cars.
Park Manor.....	7 cars.
Englewood.....	20 cars.
46th Street.....	16 cars.
31st Street.....	10 cars.
18th Street.....	10 cars.

Yours very truly,

(Signed) C. E. JUDSON, *President.*

STATE OF ILLINOIS, }  
COUNTY OF COOK. } ss.

I hereby certify that the above is a true and exact copy of the original letter.

L. A. WILEY,

*Secretary Consumers Gas Company.*

Subscribed and sworn to before me this 21st day of May, A. D. 1894.

THOS. B. WELLS,  
*Notary Public.*

[NOTARIAL SEAL.]

## Plaintiff's Exhibits.

101

115

## PLAINTIFF'S EXHIBIT "F."

Plaintiff's  
Exhibits

Statement showing pipe ordered by Crane Co. in 1890.

July 23	8-inch pipe.....	255,200	48.33 miles
" 23	6-inch " .....	29,400	5.56 "
" 23	4-inch " .....	29,400	5.56 "
" 23	10-inch " .....	26,400	5.00 "
" 23	3-inch " .....	26,400	5.00 "
		366,000	69.45 miles
July 31	5 5-8 casing.....	6,000	1.13 miles
Aug. 9	8-inch pipe.....	156,850	29.70 "
" 20	6-inch " .....	26,400	5.00 "
" 20	4-inch " .....	26,400	5.00 "
" 20	10-inch " .....	24,600	5.00 "
" 20	3-inch " .....	26,400	5.00 "
		105,600	20.00 miles
" 21	8-inch " .....	78,540	14.87 "
Sept. 9	8-inch " .....	31,240	5.91 "
" 12	8-inch " .....	45,540	8.62 "
" 20	8-inch " .....	8,300	1.57 "
" 23	8-inch " .....	55,266	10.46 "
Total miles.....			161.71
Ordered by Consumers' Company...			25.06
Total miles ordered.....			186.77

## PLAINTIFF'S EXHIBIT "G."

Plaintiff's  
Exhibits

Pipe received from Crane Co.

		Feet.	Miles.
1890			
Aug. 15	3-inch.....	20,661.9	3.91
" 18	3-inch.....	7,047.6	1.34
" 22	8-inch.....	19,159.4	3.63
" 23	4-inch..... 1,522.10		
" 23	5 5-8-inch..... 3,000.10		
" 23	8-inch..... 9,647.7	14,171.3	2.68
" 25	8-inch.....	12,805.10	2.43
" 26	4-inch..... 1,551.4		
" 26	8-inch..... 18,731.	20,282.4	3.84
" 27	8-inch.....	7,261.8	1.38
" 28	5 5-8-inch..... 3,015.3		

1890

	Aug.			Feet.	Miles.
	" 28	8-inch.....	3,301.4	6,316.7	1.20
116	" 29	8-inch.....		7,550.9	1.43
	" 30	6-inch.....	1,500.5		
	" 30	8-inch.....	6,601.8	8,102.1	1.53
Sept.	1	8-inch.....		14,821.5	2.81
	" 2	8-inch.....		20,625.3	3.91
	" 3	8-inch.....		8,064.9	1.53
	" 4	8-inch.....		14,258.4	2.70
	" 5	8-inch.....		9,764.11	1.85
	" 6	4-inch.....	9,687.3		
	" 6	8-inch.....	30,680.		
	" 6	10-inch.....	1,993.3	42,360.6	8.02
	" 7	8-inch.....		2,216.8	.42
	" 8	8-inch.....		8,895.9	1.68
	" 9	8-inch.....		20,652.8	3.91
	" 10	10-inch.....		2,285.1	.53
	" 11	3-inch.....	26,408.5		
	" 11	8-inch.....	8,747.3	35,155.8	6.66
	" 12	8-inch.....		10,041.2	1.90
	" 13	8-inch.....		1,301.11	.25
	" 15	8-inch.....	6,808.2		
	" 15	10-inch.....	22,096.7	28,904.9	5.48
	" 16	8-inch.....		26,288.4	4.98
	" 17	8-inch.....		12,213.7	2.31
	" 18	8-inch.....		5,934.6	1.12
	" 19	8-inch.....		14,462.5	2.74
	" 20	8-inch.....		14,426.2	2.74
	" 22	8-inch.....		14,101.3	2.67
	" 23	8-inch.....		12,784.11	2.42
	" 24	8-inch.....		11,441.9	2.17
	" 25	8-inch.....		13,844.	2.62
	" 26	8-inch.....		10,998.4	2.08
	" 27	8-inch.....	16,574.4		
	" 27	10-inch.....	16,156.4	32,730.8	6.19
				<hr/>	<hr/>
				512,474.10	97.06
1890				512,474.10	97.06

Sept.	28	4-inch.....	2,933.5		
"	28	8-inch.....	7,250.10	10,184.3	1.93
"	29	8-inch.....		9,710.5	1.84
"	30	8-inch.....	8,736.5		
"	30	10-inch.....	4,935.7	13,672.	2.59

*Plaintiff's Exhibits.*

103

			Feet.	Miles.
1890				
Oct.	1	4-inch.....	3,033.8	
"	1	8-inch.....	11,253.9	2.71
"	2	8-inch.....	3,131.	.59
117	"	3 8-inch.....	11,228.7	2.13
Oct.	4	8-inch.....	3,489.11	
Oct.	4	10-inch.....	2,068.	5,557.11
"	5	8-inch.....		1,840.3
"	6	8-inch.....	6,192.3	.35
"	6	10-inch.....	3,228.5	9,420.8
"	7	8-inch.....		7,451.3
"	8	8-inch.....		5,351.8
"	9	8-inch.....		2,530.6
"	10	6-inch.....	2,205.1	.48
"	10	8-inch.....	6,478.11	8,684.
"	11	8-inch.....		4,419.7
"	12	6-inch.....		2,203.2
"	14	6-inch.....		2,184.1
"	15	6-inch.....		2,177
"	18	8-inch.....		16,061.5
"	29	8-inch.....		1,002.9
Nov.	3	8-inch.....		1,002.6
Received by Consumer's Co. ....			644,575.3	122.07
			61,399.11	11.63
			705,975.2	133.70

PLAINTIFF'S EXHIBIT "H."

Statement showing receipts of pipe from Crane Co. in 1890.  
By Months.

Received during month of August.....	123,359.1
Received during month of September...	422,682.5
Received during month of October.....	97,531.3
Received during month of November....	1,002.6
Received by Consumers Co.....	61,399.11

705,975.2

Total 133.70 miles.

118

## PLAINTIFF'S EXHIBIT "K1."

Crane Company, Late Crane Bros. Manfg. Co.

CHICAGO, Nov. 15, 1890.

*Secretary's Office, Columbus Construction Company, City:*

GENTLEMEN: We are informed by your Mr. J. S. Smith that the ten miles of three-inch line pipe shipped you, on our contract, to Greentown and Swayzee, Indiana, all of which you rejected, as per your letter of October 1st, still lies at the stations named.

This being the case we should like you to ship sixteen thousand (16,000) feet of this three-inch line pipe to Crane Company at Warren, Indiana.

The expense you may incur in re-loading this 16,000 feet for shipment as above will of course be chargeable to us, and we beg to request that same be made as low as possible.

Please send us a debit memorandum with tally of the pipe shipped, as quickly as possible, and as the pipe is wanted at once we trust you will have it forwarded very promptly.

We further request that bill of lading be delivered to us here at the very earliest possible moment, so that the pipe may be taken care of promptly upon its arrival at destination.

Your careful attention to the above requests will greatly oblige.

Yours respectfully,

CRANE COMPANY.  
GEO. L. FORMAN, *Secy.*  
Bishop.

"K 2."

Crane Company, Late Crane Bros. Manfg. Co.

CHICAGO, Nov. 28, 1890.

*Columbus Construction Company, City.*

GENTLEMEN: On same conditions as mentioned in our letter of 15th inst., in accordance with which you shipped, to the address given by us, 16,000 feet of 3-inch line pipe originally sent to you at Greentown, Indiana, please ship additional one-half mile of this pipe to Silurian Construction Company, Warren, Indiana.

Please have same forwarded at the very earliest possible moment and send us tally and bill of lading quickly.

Your best attention to this request will greatly oblige.

Yours very respectfully,

CRANE COMPANY.  
Bishop.

119

"K 3."

Crane Company, Late Crane Bros. Manfg. Co.

CHICAGO, Dec. 4, 1890.

*Columbus Construction Company, City.*

GENTLEMEN: Please ship five thousand feet of the three-inch Line Pipe received by you at Greentown and Swayzee, Indiana, to Knight & Jilson, Indianapolis, Indiana.

Please have this pipe forwarded as quickly as possible, sending us tally promptly, and greatly oblige,

Very respectfully.

CRANE COMPANY,

Bishop.

"K 4."

Crane Company, Late Crane Bros. Manfg. Co.

CHICAGO, Dec. 9, 1890.

*Columbus Construction Company, City.*

GENTLEMEN: Will you please let us know by bearer whether or not the 5,000 feet of the 3-inch line pipe which we instructed you a few days ago to ship to Knight & Jilson, Indianapolis, Indiana, has yet gone forward, if not when you expect it will be shipped, and much oblige.

Yours respectfully.

CRANE COMPANY,

Bishop.

"K 5."

Crane Company, Late Crane Bros. Manfg. Co.

CHICAGO, Dec. 22, 1890.

*Columbus Construction Company, City.*

GENTLEMEN: As yet we have not received tally of the 3 inch pipe shipped by you some days ago to Indianapolis. Will you please send same by bearer, or forward by mail to-night, if possible, and greatly oblige.

Yours respectfully.

CRANE COMPANY,

Bishop.



Crane Company, Late Crane Bros. Manfg. Co.

CHICAGO, Jan. 9, 1891.

*Columbus Construction Company, City.*

GENTLEMEN: Please ship at the earliest possible moment to Messrs. Knight & Jillson, Indianapolis, Indiana, the remainder of the three-inch Line Pipe shipped, on our contract, to you at Greentown and Swayzee, Indiana, and which you rejected.

You have already reshipped on our orders, about four and one-half miles of this pipe, which would leave a remainder of about five and one-half miles, including the 5,000 feet ordered from you on the 3rd inst., to be shipped to Knight & Jillson, Indianapolis.

Please have this pipe shipped at once, and forward us tally and bill of lading without delay.

Kindly acknowledge receipt of this letter and state when the pipe will be forwarded.

Yours respectfully.

CRANE COMPANY,  
A. M. Gain.

PLAINTIFF'S EXHIBIT "L."

Cash paid to Crane Company.

Aug. 25	to cash	\$20,000 00
25	"	20,000 00
28	"	20,000 00
29	"	20,000 00
Sep. 1	"	20,000 00
3	"	20,000 00
8	"	40,000 00
11	"	20,000 00
15	"	20,000 00
16	"	20,000 00
18	"	20,000 00
20	"	20,000 00
22	"	20,000 00
24	"	20,000 00
26	"	20,000 00
29	"	20,000 00

Oct. 22 to cash.....		\$20,000 00	
4     "     .....		20,000 00	
10     "     .....		20,000 00	
18     "     .....		40,000 00	
121 31     "     .....		30,000 00	
Nov. 25     "     .....		15,000 00	
	Paid by Consumers Gas Co.	55,000 00	
Apl. 30     "     Paid for freight.....		141 83	
Oct. 27     "     "     .....		91 40	
31     "     "     .....		25 00	
31     "     "     .....		369 03	
Dec. 2     "     "     .....		317 72	
		<hr/>	
		\$540,945 28	

PLAINTIFF'S EXHIBIT "K."

Pipe returned to Crane Company.

Nov. 20 to 260 Pcs. 3 in. Pipe	5,336 ft.....	\$1,202.81
21 to 264     " 3 in.     "	5,400.3 ft.....	1,217.32
21 to 260     " 3 in.     "	5,263.11 ft.....	1,186.58
Dec. 2 to 131     " 3 in.     "	2,660.10 ft.....	599.81
11 to 243     " 3 in.     "	5,001.1 ft.....	1,127.33
		<hr/>
		\$5,333.85

Copy

PLAINTIFF'S EXHIBIT "J."

Columbus Construction Company, Chicago Office.  
138 Washington St., Rooms 915, 916, 917,

CHICAGO, October 1, 1890.

Messrs. Crane Co., City.

GENTLEMEN: I am advised by our field men that the 3-inch pipe shipped by you on account of our contract, to Greentown and Swayzee, does not conform to the requirements of the contract, in this, that when screwed together it will not make a tight line under 325 pounds pressure. We have attempted to use some of it for tubing wells and have been unable to get good results.

Also desire to call your attention to the 5 5-8 tubing shipped us at Greentown, which we have tried to use in the wells we are now drilling and have been obliged to abandon for the reason given by our driller, as follows: "I have just returned from a three days' racket with the casing at No. 19. We pulled two times and found one joint with a hole in it and several that leaked under the col-

lar. It is almost impossible to make it tight. I have used  
122 some Allison casing on the bottom of all but this well and do  
not believe you can make the wells free from water with this  
casing."

You will please advise what disposition shall be made of the  
3-inch pipe and 5 5-8 casing at your earliest convenience.

Also desire to call your attention to condition of 8-inch pipe  
laid in the main line, delivered on account of our contract, which  
has been partially tested under an air pressure of sixty to seventy  
pounds. Several of the pipe in the line have been found with  
holes in them, developed under this test, and a large percentage of  
the joints more or less defective. It has been found necessary to  
cork in order to stop leaks, which it seems to me would be entirely  
unnecessary if the pipe was properly tested and joints proven to be  
well made at the mills. A large percentage of the joints appear to  
stand the pressure and be perfectly tight, and I cannot see any  
good reason, barring accidents, why all joints should not prove up  
in the same way.

Kindly advise what action you desire us to take in regard  
to the removal of the defective pipe or corking of the defective  
joints.

Yours, very truly,

(Signed): C. E. HEQUEMBOURG,  
*President.*

123 All of the witnesses who were called and testified on the trial  
of this cause, on behalf of the plaintiff, and of the defendant,  
were first duly sworn.

ALFRED SMEDLEY, called on behalf of the plaintiff, testified as fol-  
lows:

I live in Oil City, Pennsylvania. Am chief engineer of the  
National Transit Company, and have been since 1877. I have  
been connected with that business in New York, Pennsylvania,  
Ohio, West Virginia and Indiana. The Transit Company is inter-  
ested in both oil and gas. I have been connected with a gas line  
from Warren to Erie, from Wilcox to Buffalo, from Western Ohio  
into Toledo, and from Lake County, Pennsylvania, to Youngstown.  
The Buffalo line is about twenty miles long, the Youngstown  
seventy-four, the Erie line seventy-five miles, the lines to Toledo  
thirty-eight or forty. The pipe used in these lines is 8-inch, except  
two, which are 10-inch. Think I am familiar with what is known

as 8-inch standard line pipe for conveying natural gas. These lines have been constructed since 1886—the last one probably five or six years ago.

Am familiar with the process of laying 8-inch standard line pipe, and of testing it at the mills by hydraulic test. The hydraulic test is as follows: A hydraulic pump of great power is used, capable of putting on a pressure of about two thousand pounds. The pipe is clamped in a bench, with the two ends. They take one joint of pipe with the coupling, and it is fastened with a stopper at each end, so as to make a perfectly tight joint at each end. After that, it is filled with water, and then pressure is applied, and as soon as the gauge shows the necessary pressure, the cock is 124 opened and the water is allowed to escape. If there is a split or flaw in the pipe, they mark it with a piece of chalk, and if there is none, it is rolled out as tested. The pressure is never allowed to stand over five or ten seconds. I have never seen it stand longer than that.

I am somewhat familiar with the method of testing gas line pipe in the field by the pressure of gas from the wells. The city lines are all tested, I think, with air pressure. The highest air pressure that I remember with any lines with which I was connected, was from 300 to 350 pounds to the square inch. There is no importance attached to the test at the mill.

The thread of both the pipe and the coupling should be in exact conformity, and should be clear and well cut, with clean threads, and both of exactly the same taper and size. Otherwise, you cannot make a good joint. If there is want of conformity between the thread on the pipe and on the collar the irons would not fit together, and would not make a tight joint. If there is a serious or material defect in the character of the thread on either the pipe or collar, it will not make a tight joint. In 8-inch standard line pipe, in order to make a tight line, all of the thread on the pipe and coupling should be in conformity to the length of at least two inches; two and a quarter inches would be better.

I am familiar with the strain to which pipe is subjected by changes of temperature. The effect is to change the position of the line to some extent. A line laid perfectly straight in warm weather would pull apart in cold. So in laying the line there has to be a certain amount of deviation from a straight line to allow for any little movements due to temperature. If the thread on the 125 pipe and collar is less than two inches, there will be danger that the contraction would pull the line apart. The effect would be the same in case the taper between the pipe and the collar and the thread were not uniform, the joint would be less strong and pull apart upon contraction. I have seen the effect in a great many

instances. I have seen the pipe pushed sideways by expansion as much as six inches out of line. It would be impossible to make a tight joint of 8-inch standard line pipe where there is not uniformity of taper between the pipe and collar. Iron calking upon 8-inch standard line pipe under say 300 pounds pressure to the square inch, is ineffective against leakage. The effect of expansion or contraction of a line of pipe which has been calked at the joints would be to loosen them. Theoretically, the joint, if a good one, should be just as strong as the pipe. Practically, we not very often find it just as strong. The more perfect the joint is the stronger it will be.

Upon the reconvening of court at two o'clock P. M., the direct examination of Mr. Smedley was resumed, as follows:

With reasonable care if pipe is put together on the bank of the trench, two or three feet deep, if there is a proper thread and proper taper on the pipe and collar, and the pipe is properly put together, the joint would be just as good after the pipe is put into the trench. The highest well pressure with which I was familiar was 800 pounds.

I have had no experience in the Indiana gas fields, but have in the Ohio gas fields. From general information gathered in my business, the sources of supply in the Indiana gas fields are similar to those in the Ohio gas fields; they are from the Trenton Rock. The limestone rock underlies the whole of that country.

In the Pennsylvania gas fields there are several strata from which the gas is taken; they are all sand rock, none limestone. I do not know of any instance in which the pressure was greater after the wells had been drilled than it was at first in the Ohio fields, I have known a great many where it was less. The difference in the character of the strata from which gas is derived, would make a difference to the subsequent developments as to the pressure in the Pennsylvania gas fields. I was acquainted with the different appliances used in laying and operating gas lines, and for stopping leaks, and remedying defects up to, and including, 1890. A clamp was the only successful means of stopping the leaks.

In describing a clamp I would say, they use two yokes, each one is a semi-circle bolted together with lugs, with a groove around that, and one is put on each side of the collar with a rubber ring put in the groove, and then cross bolts from one of the yokes to the other, generally five or six of them. The semi-circles are thus drawn together and force the rubber in the recess around the collar to prevent a leak. If the line was buried they had to dig down to the collar, and dig around it and put the clamp on by hand. I cannot answer very closely as to the cost of putting them on. The clamp itself cost about \$2.50, as near as I can tell. The work of

putting them on would cost nearly as much as the clamp in ordinary cases.

127 As to the durability of the device, I would say that within the last two or three years several of the rubber rings gave out that we put on in 1890. I cannot say they all have given out. I know of instances where they had to use something else instead of rubber rings where the line was under water. I do not think they could be put on at all, though I never saw it tried, and I do not think it would make a good job.

Based upon my experience and knowledge of the business I would regard it necessary to test a line intended to carry a pressure of 300 pounds to twice that amount, both as a factor of safety and in order to insure a permanently tight line.

*Cross-Examination.*

The views as expressed are, in fact, in nearly every instance, based upon individual experience with 8 inch standard pipe. The first line I had to do with was from Wilcox, Pennsylvania, to Bradford, Pennsylvania, about twenty-one miles long. I think it was in 1884 or 5. I had charge of all the construction of the line, and the men on the line. It was a single line of 8 inch pipe. I did not have charge of the manufacture of it, but visited the mills two or three times, simply to instruct the inspectors.

I think the Pennsylvania Tube Company made all of that pipe. Those mills are in Pittsburg. I had to do with the preparation of the specifications for its manufacture. I do not think there was anything said in the specifications about testing at the mill. It is generally the custom to test pipe at the mills.

128 We did not say anything about the testing in the specifications because we required a line to stand our test in the ground after it was laid. We paid no attention to the mill test. The pressure from the wells in connection with that line, were from 550 to 600 pounds from the well. I supposed the mills understood the pressure the wells would furnish. We had an inspector in the mills to see that the threads were well cut, and to see that the couplings were in good shape, and that in putting them on they did not cover up the bad threads, and to see that there were no blisters in the pipe, and that it was straight. The inspectors would not pay any attention to the test, except to look for leaks around the couplings. They could examine to see if the pipe burst. Think I remember the specification as to the thread of the pipe, and as to the weight. Think it was put 28 and 24/100 pounds. The weight was not put in the specifications. The use of the term standard meant all that I have stated. The specifications provided that the collar should

be standard. Don't just recollect the weight; I think about 25 or 27 pounds. I never heard any special weight given for the collar. We depended more on the strength of the collar than the weight. They also provided that the taper should be uniform from one end to the other. In this pipe the slant is about  $\frac{5}{8}$  of an inch to the foot. I didn't examine every joint. In laying that line there was one gang. Was out in the field part of the time. Had a foreman under me. Did not give the personal directions to the men.

Lived about twenty-one miles away at Bradford. The National 129 Transit Company is the company that put the pipe in. I depended particularly upon my foreman. Had a great many other things to attend to at the time. Think I saw some of the pipe unloaded. It was brought near to the ground by railroad on gondola cars. In the majority of cases the pipe was unloaded from the car into a wagon. They put two skids from the car to the wagon, and rolled the pipe onto the wagon. The pipe was lifted from the bottom of the car to the top with handspikes. They generally let it roll off the car down the skids into the wagon without ropes, unless it was very steep. When the wagon was lower they had a rope fastened to the body of the car, when the pipe was allowed to catch in the loops of the rope and roll down. The pipe was all laid on the ground and screwed together and put in the ditch afterwards. We have laid pipe both ways and had good lines. When laid on the ground the ditchers followed closely, closing it up. This was done to avoid the effect of the air. If it is allowed to lie on the ground there would be expansion and contraction. It would push the pipe to one side, or might pull it apart. It might loosen the joints. We have had lines pull apart. Could not see any other reason than the contraction and expansion. In such cases the threads would be generally stripped off. They always tried to get it down early in the morning before the sun got high. Have noticed others taking same precaution. Where we had to bend the pipe it was first heated. If it was bent cold it might possibly injure the joints. We don't generally want to take the chance. A small bend could be made cold, not over ten 130 degrees. In laying that pipe they cleaned both the pipe and the coupling. It was done with brush and oil. In screwing up that line we used lard oil. Think it probably just as good as white lead. I don't think they could screw up a cross-threaded pipe. We made no particular tests on that line; covered it up without testing. Think we turned in about 300 pounds pressure, which has been maintained ever since. Don't know whether there was any calking done on that line. Can't tell whether it has been repaired; I have not had charge of it.

The next line I had to do with was the Meadville line, about



thirty-eight miles, eight-inch standard line pipes; think it was in 1885. Think we used the same specifications as for the pipe in the other line. Don't recollect about examining the taper in the Meadville line. Only inspection at mill. The collars were standard collars. The collars are made heavier now than they were then. The collars on the Meadville and Wilcox line were just the same. In the Meadville line there were two gangs employed in laying it, twenty-five men in each gang. That's the number commonly used. The man who stood near the joint when the pipe was being screwed together had a small hammer. He sometimes tapped the pipe as it turned. We generally forbade them doing it. I didn't think it did any damage at all. The test we put on the Meadville line was the well pressure. We made no other test than that. We didn't shut line up for test. The line was about all covered up when we turned the gas in. The next line we laid was the Titusville line, about eighteen miles long. Think the same specifications were used as to the 131 pipe that we used in the other lines. After that line was laid we simply turned in the gas. That was the only test made. The next line was the Franklin line, laid about the same time. It was ten miles in length, and of 8-inch pipe, with ordinary standard collars. This line was laid in the same manner as the others, and tested in the same way. The next line was the line to Youngstown, 74 miles long. Think they used the same specifications as in the other line. Had to do with the laying but not with the specifications. We tested this line just the same as the others. We never tested any of these lines above 300 or 325 pounds; that was the daily pressure. Think the next line was the Erie line, 75 miles long. Think the next was the Buffalo line, about 90 miles long. The Buffalo line was nearly all laid in the ditch by hand. Where the ground will admit of it, laying by machine is the best method. About four years ago we laid another line from Kane to Olean, New York. Think it was 38 miles long. Don't know much about it. The only test was by turning the gas in. When I spoke of making a test as to the factor of safety, it is largely based on my own ideas. I think the first I was asked on that subject was by General Hunt. In steam boilers, we test the double the amount the boiler is expected to carry. In measuring the taper on the Alison pipe in the Buffalo line, I did it with a ruler, an ordinary steel rule. I just laid it on the thread to see if it was uniform. I have measured the pipe by calipering it. I have done it a great many times, both on the coupling and the pipe. I think I can take a piece of pipe, and with a pair of calipers tell how much the taper is to the inch. I never experimented with pipe and col-

132 lar for the purpose of ascertaining at what variation of taper



they. there would be a leak. I don't know that any part of the lines I have spoken of was taken up because of any difference in the taper, or because of leakage on that account. In putting on a heavier collar, as I stated, the idea was not mine. I think all of the lines leak more or less with the lighter collars, because I had to tighten many of them. Many of the old lines were clamped. In one of them I think one-half of the collars were clamped. In the Erie line there are a great many clamps. They were put on two or three years after the line was laid. They would last two or three years without clamping, and then we would have to clamp about fifty per cent. of all the joints. As gas became scarcer they looked up what became of it, and tried to find the reason for not getting more gas through the line. The men detected leaks in the lines by smelling the gas. Sometimes they would drive a crowbar down and the gas would follow up. I never saw a gas line tested. This clamping process was commenced little by little as the escaping gas was discovered, but at the last it was very general. We ordered clamps by the carload and put them in pretty nearly every joint.

The reason we did not make a test on any of the lines I have spoken of was because people were in a hurry for the gas and we went on without making any particular test. I never saw a gas line tested in my life.

#### *Re-direct Examination.*

Lard oil is used generally in screwing the joints together at 133 the mills. Cross-threading is where, in screwing the joint together, the threads start crooked. To a man of experience, cross-threading would be discernible at once. It would be very difficult to screw a joint up cross-threaded. An intelligent gang would not do it, because they could tell very quickly. The pipe would wobble around and would not run straight. The Pennsylvania country is very hilly. In a level country they could get along with a man or two less in the gang. We did not use a machine for screwing pipe in Pennsylvania, on account of the hills. The thread on the pipe is cut with a die. As long as the die is clean and sharp, it will cut pipe with a proper taper, but as one side does more work than the other, and as they get dull, they grind off, and if they are not watched; when they get the die down to an inch in width, it will only cut one inch of taper on the threads and one inch of straight thread. And in that way mills can vary. A crooked joint might be started cross-threaded, but it would be hard to start a straight joint cross-threaded. Laying pipe in the ditch is about the same as laying it on the bank. In laying or screw-

ing pipe in the ditch the end of the pipe has to be held up for the other pipe to be inserted, with a jack under it. There is generally one collar or two off of the ground. Very often a block under the coupling further back. The pipe is stabbed, as they call it; that is, inserted as far as it can be by hand, and the tongues are put on and it is screwed up, and then as they move forward the pipe goes to the ground. The pipe is held up by a jack which is about eight feet long. It is wooden, with iron pins, so they can hold it from the ground three feet. And then there is a board that the 134 end of the jack rests on, so that it can be raised and lowered and get the pipe where it wants to go. In the operation there are probably two couplings off of the ground back of the one being screwed up. After the pipe is inserted in the collar and screwed up, the jack is moved up another pipe length, and one length is then lowered into the trench. It would be very difficult to put pipe in the bottom of the trench and screw it up there. One or two joints might be screwed that way.

*Re-cross Examination.*

I can't tell exactly the pitch or slant or taper of the Allison pipe—Exhibit 1. I suppose about five-eighths of an inch to the foot. I say this from general knowledge and from examination. Examines defendant's Exhibit 1. It looks all right. I think it is all right. It looks all right. I wouldn't reject it for the one little defect of broken thread less than one-eighth of an inch long. I think it would make a tight joint.

CHARLES E. HEQUEMBOURG, a witness called on behalf of the plaintiff, testified as follows:

I have followed the profession of civil engineer at intervals from 1865. Mr. Foreman first mentioned to me the matter concerning contract with the Columbus Construction Company. I told him at the time that it was for a gas line from Indiana to Chicago. In connection with preparing for laying the line, I made a preliminary survey first. I made the plans, estimates, specifications and details for the work. Prior to that time I had built a natural gas plant in the city of Bradford, in 1878. Originally the supply line there was less than two miles. It was afterwards 135 extended over twenty-two miles, inclusive of the feed lines. I had to do as an engineer with gas line from McKane county, Pennsylvania, to Buffalo, New York, about ninety miles. It was

an 8-inch line, and was laid, I think, in 1885. My acquaintance with the natural gas business began in 1878, and continues to the present time. After entering into the contract with the defendant, the right of way was arranged for. The superintendents and skilled men were arranged for and brought on the ground, the necessary tools were purchased, and the equipment and pipe contracted for. The sinking of wells began the year before, in 1890. The preliminary survey was before that time. What is known as the main line begins near Greentown, in Howard county, Indiana, and continues north-westerly to the state line between Indiana and Illinois, about 106th street. The distance is 116½ miles. From Greentown north-west to the Wabash river, the country was comparatively level, with some creeks. From the Wabash to Winnemac the country was about the same. From Winnemac to Chicago, that is, to the State line, the country was flat, and in many places marshy, with the exception of the immediate vicinity between Lake and Porter counties, Indiana; that was very similar to the country from Greentown to Winnemac. The men employed for doing the work were: civil engineers, men who purchased the right of way, pioneers who were accustomed to working with powder and dynamite for cleaning up the right of way, teamsters, pipe layers of different grades, laborers, clerks, and other employes that it would be hard to designate. As a teamster and man to receive pipe, unload it and take it to the right of way, I engaged Mr. Hickox of Pennsylvania. He had a long experience in the Pennsylvania fields. Also, Mr. Jellison, who unloaded pipe and had to do with seeing that it was put at the proper switches to unload. He was accustomed to railroad business—I don't know how long. We also employed as a pipe layer L. A. Stanford, of Bradford, Penn., whom I knew fourteen or fifteen years. He was employed in laying lines and having charge of other lines with the United Pipe Lines. With us, he had charge of taking the pipe from the cars to unload it and pile it up at the stations, and take it to the right of way. And he had charge of laying the line after it was put on the right of way, and had exclusive charge of the work as necessity would develop. In other words, he had exclusive charge subject to directions from me or the general manager of that branch of the business. Mr. Clark was another employe who came originally from Pennsylvania. I didn't know him personally, but I knew of him in this class of business. He worked for us under Mr. Stanford. His employment was for the purpose of superintending, to take charge of a division. That is the same class of work as that undertaken by Mr. Stanford. I made inquiry as to his capabilities, of the Indianapolis Gas Company, where he had been employed, and of

the National Transit people. I did it by personal interviews with men in authority in that company. They said they knew of no better man. Another employe was Jackson Raymond. At Deep river, he had charge under Mr. Stanford of laying pipe with the engine, and such other duties as were incident to a position of that kind. Another employe was Capt. Howe. I knew 137 him in Pennsylvania. He was there engaged in the business of constructing pipe lines. We first employed him as a field man, and afterwards put him on a line in charge of the work, very much as we did Clark and Raymond. I remember also a Mr. Daley. I had known him for a number of years in Bradford. There is another man whose name I cannot recollect, Sweeney, or something of that kind. Sweeney and Daley had charge of the pipe tong gangs, that is, the men who screwed the pipe with tongs instead of the engines. I never knew Daley before, but the other man I had known for a number of years. Daley remained in our employ until he died. I think he was there during the laying of the Deep river section. There was also another man named Fred Hequembourg, a brother of mine, and a Mr. Mosier. My brother had been an employe of mine for a number of years in the gas business. Mr. Mosier, also. I knew Mosier in the Bradford field. I think his employment begun there in '79 or '80. Under me at Bradford, he was a field man, having charge of the lines and wells. At Deep river, he had charge first of the construction of the proving stations, and later on charge of the operation and testing of the line—that is, putting air on the line. Afterwards, he had charge of the calking. There was also a Mr. Murray who came from the same country in Pennsylvania. I can't tell you especially what he did whilst with us. Prior to that he had been a general gasfitter in our employment in Bradford until he went to Indianapolis in the same business. There was also 138 Elwood Haynes; he came from the Portland Gas Company, in the eastern part of Indiana. He had charge in the field of unloading pipe and other affairs connected with the line near Greentown. Also Henry Coyle, who came from Pennsylvania. I had known him for many years. At that time he was what you call an oil operator and driller, a man accustomed to this line of business. In the construction of this line, he was engaged in 1890 in taking care of the field lines in Indiana; by that I mean those lines that connected with the wells and came up to the pumping station. He went around among farmers drilling wells. In 1879, he and Mr. Mosier laid a line for me from Portland, Ind., into Ohio. There was also Brewer Button. I had known him in Bradford. He was in the livery business there. In connection with the construction of this line, he was receiving and carrying pipe

to the line, unloading it and distributing it. There was also Jacob H. Smith, acting at that time as general manager of the Columbus Construction Company. The employes were provided with written instructions—that is, the men who had charge of the scope covered by the instructions.

Said instructions were offered in evidence, and read, as follows:

GENERAL MANAGER'S OFFICE,

COLUMBUS CONSTRUCTION COMPANY,

Chicago Office 138 Washington Street, Rooms 915m, 916 and 917.

CHICAGO, 1890.

DEAR SIR: On taking charge of the shipping points to which we consign pipe and materials, see the railroad agent and learn 139 at once the condition and length of switch and the unloading facilities. Arrange for all the room on the switch and other conveniences possible to get, with a view to getting the teams loaded easily and quickly for hauling to the line.

Get proper skids and ropes ready at once, with suitable ground, and enough of it, to unload and stack the iron without piling it too high, placing poles or other timber under the pipe to keep it off the ground.

Examine the joints for blisters, crooks, holes, dents or other imperfections, and all threads and couplings, with the utmost care. See that the protectors are on the ends of the pipe (replace all that are off before unloading car), and see that the material is in every way in good or bad condition, and note the same. All that is in any way imperfect pile neatly and mark "REJECTED" plainly.

In unloading, piling up and loading on wagons the greatest care must be used, and the work must be done under your *personal direction*. Send no defective joints to the field.

See that the iron is carefully handled, and that no threads are injured, and that it is not violently handled in any way.

Carefully measure and tally each joint, note difference between your own and mill measurements (which you will find stamped on each) as they occur.

Weigh several joints from each car, selected at random, so as to determine the average weight per foot. Weigh not less than four or five joints to each car, and note same in your report. 140 Keep accurately each car number, date of receipt and mill shipped from, number of pieces and lengths, as our blanks direct, with each car separately.

See that the teams are properly loaded, and that each team-

ster receipts to you for his load, and get his report on his return of its delivery. Inst

You will also find proper blanks or checks for this purpose.

Keep the time of your men and that of the teamsters, for which you will be furnished time-books.

It will be your duty to report daily, and promptly, the condition of the various switches and unloading points, with the amount of pipe received, delivered, on hand, men, teams, etc., etc., for which you will be furnished with proper blanks.

Our superintendent will give you further directions as to the handling and care of materials in your charge from time to time.

Yours truly,

JACOB S. SMITH,  
*General Manager.*

JAMES S. JELLISON, a witness called on behalf of the plaintiff, testified as follows: Test  
Ja

My name is James S. Jellison. I live in McDonald, Michigan. Have been there a little over two months. Am an electrician by trade. In August and September, 1890, I was working for the Columbus Construction Company at Tolleston, Liverpool and Clark, in the State of Indiana. L. A. Stanford employed me 141 to unload gas-pipe off the cars. We had written instructions, of which I had a copy. I cannot find the copy now, but have hunted for it.

(Witness is handed paper marked "Exhibit O," and states that he believes it to be a copy of the written instructions.)

I received them from Fred Hequembourg. I think we commenced unloading pipe about the 20th or 22d of August at Tolleston. We put skids up on the sides of the car and then lifted the pipe up out of the car onto the skids and let them roll into the sand. The skids were placed on the top of the side of the gondola cars. I had five men on the car, and we took the joints up and laid them on the skids. There were thread protectors on the pipe in the cars. Some of them were off. Some were lying in the car, and some gone entirely. Those in the car we screwed on the pipe before letting it down. We frequently went down to the pile and took off protectors and put on pipe which was on the car which had no protectors on. At Tolleston there was a large sand hill on the switch side of the railroad. We rolled the pipe out twenty or thirty feet from the end of the skids. The sand was heavy and used to stop them. We rolled the pipe up on piles. Some of it

was lifted up bodily and some rolled up on skids on to boards. We used to lay piles and boards on the pipe to roll it back on the pile. I don't know that we ever let the pipe roll down so that it would roll as far back as the pile by its own velocity. For protection we had pieces of wood, four by four, stood up at each end of the 142 pile, and a man at each end with a handspike to keep the joints from rolling against each other. Rope was tied on the car near the end where the skid was laid up. There were two men at each end of the rope. They stood in the car. The rope was used to let the pipe down the skids. And when it got nearly to the end of the skid we tossed the rope off, and the pipe would back pretty near to where we wanted it. I sometimes handled pipe myself. The grounds at Liverpool were about two acres. It was nearly level. The foundation was sandy. The pipe was unloaded there the same as at the other place, as I just stated. The thread protectors were two-inch bands about quarter of an inch thick, were made of iron. We had blocks between the pipes at Liverpool, the same as at Tolleston, and rolled them up by hand on the pile in the same way. The handspike is a piece of timber five or six feet long and two or two and one-half inches in diameter. At Clark the yard is perfectly level. I suppose it extended a hundred feet back from the railroad. I did not unload all the pipe that was unloaded at Clark. I was there a couple of times. We rolled the pipe down on skids there the same as at other places. I don't recollect whether we used ropes or not. The yard it was covered with sawdust. There had been an ice house there; it was torn or burned down. When it came down the skids it would roll back twenty or twenty-five feet. We had the same means for protecting the pipe there as at the other places. We never rolled down a joint of pipe without putting a thread protector upon it. I superintended the loading of pipe on the wagons at these places and 143 checked off the pipe myself. I examined it when it was unloaded. The men picked up one end of the joint and laid it on the wagon, and then went to the other end, picked that up and laid it on the wagon. There were several men engaged in loading teams at a time. The loading at Liverpool was the same as at Tolleston. We did not haul any from Clark. From Liverpool the pipe went to the Tolleston marsh. All that we unloaded at Liverpool and Tolleston went there. It might have gone beyond.



*Cross-Examination.*

Test  
Jas

Can't say how many times I have seen these instructions. I can't say how soon after I went to work I got this paper of instructions from Fred Hequembourg. Had been working but a few days; not but a few days. I did not have it all the time. I had been working there but a few days before I got it. I can't tell how many days I was working at those three places altogether. I think I went about the 20th of August, and the work closed between the first and tenth of October. I was there ten hours a day every day that I worked. I can't tell how many days, but I was there more than half the time, not including Sundays. I should judge I was there more than two-thirds or the time between the 20th of August and the 10th of October. I couldn't tell how often I read the instructions. I think more than once. I couldn't state positively on this witness-stand that I did read it more than once.

(This witness was requested by Mr. Holt to examine the paper  
144 carefully, and upon such examination he read certain portions of the same, stating that he remembered they were substantially the same as the instructions which he received from Hequembourg.)

I endeavored to the best of my ability to carry out the instructions. I had not known C. E. Hequembourg before that. I have been an electrician since I quit the Columbus Construction Company. Before working for that company I was general solicitor for the Ft. Wayne Gas Company, soliciting orders among the citizens. I had also been soliciting on the road for the Ft. Wayne Organ Company. For the Ft. Wayne Company I simply went round among the customers and solicited orders.

Q. Mr. Hequembourg testified here on Saturday that he had previously known you and that you had been in the railroad business, were you? A. No, sir.

Never had anything to do with unloading gas pipe nor inspecting it. Before working for the Construction Company I never examined a joint of pipe or coupling to see whether it was defective, nor whether the pipe was blistered, or the threads perfect, except while I was working in the connecting business I had to see that the threads would fit into the coupling. The pipe with which I had to do in that connection was small 2-inch pipe. I don't understand what you mean by a tapered pipe or tapered couplings or threads. I can't tell from memory, or without looking over the report sheets, how long I was at Tolleston or Liverpool. When I went from one place to another, I took the gang of workmen with me. There were five in the gang. I think I discharged a couple of men that



of  
ellison.

145 were drinking men. I can't give you the names of the men under my employ except Tom Flaherty. I was at the head of the unloading business at those places. It was part of my business to inspect the joints, measure the lengths and take down a record of the lengths and the name of the maker. I threw out some of the pipe because I considered the threads battered. I used my own judgment as to what was important enough to throw out. So far as I know, no pipe was allowed to go into the pile or the field which had any important defect in it. I think I unloaded forty or forty-five cars at Tolleston, and about the same at Liverpool, and the same at Clark. I am not positive, however. Since the last trial I have talked in a general way with Mr. Custer about my testimony, but not with Mr. Hequembourg. Mr. Custer did not suggest that I make any changes in my testimony. Of the pipe I helped to unload at Tolleston, if my memory serves me right, we only hauled from there on wagons one or two days. I don't think there was any pipe hauled from Liverpool, but what I loaded or helped to load myself. There may have been, but the teams were under my control. Mr. Hickox had three teams. I can't name all the teamsters. Mr. Parker was one; he was from near Liverpool, with his own teams. Hickox brought his own teams and drivers from Pennsylvania. Hickox had charge of the field. I was his superior in the matter of loading the wagons. He took orders from me. My superior officer was Fred Hequembourg. Mr. Morton was with me in the first place, and a couple of days after that Fred Hequembourg came with the instructions. I was

146 also under control of Stanford. I saw him down on the work, I couldn't say how often. There was a collar on one end of the pipe and a band on the other, I don't remember whether I unloaded any joints that did not have a collar on one end. I remember some of the pipe had two collars on where they were joined together in the middle. The number of joints loaded on a wagon depended on the length of the joint and on the condition of the roads. I have not examined any of my reports during the last three years. At the last trial I looked over one of the reports for the purpose of finding out the exact time I worked for the company. I think the regular loads on wagons were from two to four joints. They hauled twelve joints only one time. I can't say in what proportion of cases the protectors would be off. Possibly there would be four or five on a car. I think there would be an average of forty-eight to fifty joints of pipe in a car-load. I did with my own hands put protectors on the pipe that had fallen off in the car—I can't say how many. I don't know that I ever took one off and carried it up to the car and screwed it on myself. I have seen that it was done. I can't say how often. I did it to protect the threads on

the pipe from any accident that should happen by rolling a joint down and striking against something and battering the threads. In two cases where one joint struck against another, I don't think we threw it out, or that the thread was damaged. We were unloading across the river at Tolleston, and had to unload across the railroad, and before we could get the pipe off, I saw a train coming, and we did not have much time, and the pipe started down and one end rolled down and struck the railroad track; one end dropped off the car and struck the rail. I cannot tell you the weight of a joint of pipe 16 or 18 feet long. Two men could lift it. The practice was to have two at each end, and one to steady the pipe. We had seven men altogether, five on the car, and two on the ground. I don't think I said that five men were all I had in my gang; if I did, I didn't mean it. To the best of my knowledge I never saw a pipe unloaded roll up against other pipe without being protected with these handspikes. The handspikes were green poles, which were got from the woods. At Liverpool the ground was almost level, so that there was very little slant to the skids. I cannot say to what extent we used ropes at Tolleston or Liverpool. I will say that we used them wherever it was necessary. I believe the work was thoroughly, well done in every particular.

*Re-direct Examination.*

We hauled four joints, and eight joints where the roads would admit of it. Some of the farmers' teams would haul two joints and four joints. The big teams, of course, could haul heavier loads than the smaller ones. In examining the pipe, I tried to examine the thread the best I could. I did not take either the collar or the thread protector off to do it.

L. C. FRAME, a witness called on behalf of the plaintiff, testified:

I live in Valparaiso, Ind., and am foreman for Leonard and Brothers, on their farm. In 1890 I was living in Porter county and was farming. I began work for the Columbus Construction Company in September of that year, under the employment of Mr. Button. I unloaded gas-pipe from the cars. I first hauled gas-pipe from Sudley. I hauled only a day or two. That was with my own team. It was hauled from Sudley due east of Deep River. I helped to unload it. We lifted it off the wagon and laid it on the ground, one end at a time, each side from the wagon. The ditch was not then dug. It was loaded on the wagon in the same way, by men lifting it. I hauled four or five or six lengths of pipe at a time on the wagon. We put a rope around the joints of the pipe, and then put in a binding pole to draw it together. The pipe was unloaded south of Sadley, two or three miles. Sudley is

is east of Ainsworth. Both Sudley and Ainsworth are on the Grand Trunk Railroad. The pumping station was at Deep River about two miles and a half from Ainsworth, east and south, and south and west from Sudley. The pumping station was eighty or ninety rods east of Deep River. I also unloaded pipe from the cars at Ainsworth. They had a little unloaded at Sudley before I commenced there. I can't tell just how long I was there, but it was until they finished unloading. I was working as a laborer. We had skids about twenty feet long put up against the side of the car. We lifted the pipe onto the skids and let it down with ropes on the ground. The skids were flattened on the top so the pipe would lie there until the rope was put around it. There were two men on each end of the car, and two on the ground. Two men on the car held the rope and let the pipe 150 down. There were thread protectors on the pipe though some of them had come off. We always looked them up and screwed them on to the pipe before the pipe was let down. The ground at Sudley was sandy and level. When we are pilting pipe we laid plank on top of the pipe. Two men stood on the ground and rolled the pipe back. We used plank, poles or rails to run the pipe up on to the pile with. I brought a load of rails from my farm. The poles we cut in the woods. We unloaded pipe at Ainsworth in the same way as at Sudley. The yard there at Ainsworth was level, but the ground more clayey.

*Cross-Examination.*

I live five or six miles away from Ainsworth and Sudley. Dave Fleming, Cash Jones, Elias Fleming, Charley Olds and my son Oscar, were working there at the same time I was. That was in September and October, 1890. My attention was first called to the fact that I worked there by Mr. Button about two weeks ago. The farm where I am is ninety acres, and there are five others running from one hundred and sixty to three hundred and sixty acres. I am superintendent of all. There might have been four or five piles of pipe beside the railroad track at Ainsworth. Sometimes they were three or four feet high, sometimes not so high, and sometimes higher. Some of them might have been twenty feet high. Pipe from different cars were sometimes put on the same pile. The pipe I hauled was not used on the Deep River section. During the unloading I stood on one end of the car myself. My son was on the ground. I didn't unload very much. The reason I know it 149 was 1890 when I worked there, is because my wife died that year. I think I worked at Whiting two weeks at unloading pipe. We had a different set of men. Mr. Button was boss at

Whiting. When the pipe was in the cars, the ends with the collars on always lay in the same direction. The other ends had a kind of band on. The band was an inch and a half or two inches wide. Some of them had paper underneath the bands. I should think the lengths of pipe would weigh five or six hundred pounds. The pipes were not allowed to go down so that the ends or the collar ever struck the pipe previously unloaded. We had holds to prevent that. I think we always found the protectors which were off the pipe, in the bottom of the car. I did not help to load any of the wagons at Ainsworth. I did at the other places. The pipe varied in length from twelve to sixteen, may be eighteen feet in length. It might be they were as much as twenty. In unloading pipe in the field, we drove up to the end of the pipe as close as we could and unloaded the pipe on each side of the wagon, first lift up one end and lay that down, and then go to the other and lay that down and then move up and unload two more in the same way. I don't think there was any chance for the pipe to hit each other while being unloaded. I think there were four men in the field, and the teamsters helped each other. At the time I worked for the Columbus Construction Company I was living in Porter township on sections 11 and 12. I have a one hundred and sixty acre farm. It is south-west of Valpariso. I moved away from there three years ago, and had lived there since 1847. At Sudley I should there were five or six different piles of pipe along the 151 railroad track. The manner of unloading the pipe there was the same as at Ainsworth.

*Re-direct Examination.*

Some of the pipe was hauled right away from the cars as it was unloaded, and not piled up. The thread protector which had paper on the inside of it was made of iron. Some of them were loose so that they fell off in the car. The pipe which I helped to haul was delivered about three miles east of the pumping station.

EBENEZER HILL, a witness called on behalf of the plaintiff, testified:

I live in South Norwalk, Conn., and am general manager of the Norwalk Iron Works Company. I came with the company in 1870, and have been general manager eighteen or nineteen years. The company is a manufacturer of compressors for air and gas, sometimes called air pumps. They began making compressors of

100 pounds pressure to the square inch before I went with the company. The earliest high pressure engine we made was delivered September 13, 1884. It was guaranteed for 2,000 pounds pressure. I tested it at 3,000 and subsequently saw it working at 3,500 pounds. We made a number of compressors for use in the United States, from one to two thousand pounds, before 1890. We made two compressors for the government for the dynamite cruiser Vesuvius, which were delivered in May, 1888. This machine compressed to 2,500 pounds. The results of the test upon those two compressors were a matter of general notoriety, being published in 152 the newspapers of the day. I sent to a gas company of this city a small compressor of a thousand pounds in 1889. It was replaced by another in the same year, specified to be used from 1,200 to 2,000 pounds pressure to the square inch. I saw the last mentioned machine in this city about the time of the last trial of this case (which was in December, 1894). In 1890 the pressure capacity of machinery was a matter of general scientific knowledge. Natural gas under the same pressure as air will find the weak points of the line quicker than air, because it is a fluid of less specific gravity, and will pass more quickly through an opening. I made a compressor for the Columbus Construction Company and sent it to Ainsworth, Indiana, on October 2, 1890. It had a capacity of one thousand pounds. In the summer and fall of 1890 it was possible to use an air compressor with a pressure up to the capacity of the machine upon an 8-inch gas pipe laid in line. October 20, 1890, I sent a compressor to the Columbus Construction Company at Winnemac. It also had a capacity of one thousand pounds to the square inch. The ordinary pressure in the locomotive boiler is from 120 to 140 pounds; extreme high pressure from 180 to 200.

*Cross-Examination.*

Prior to 1890 I never had heard of an air compressor being applied to a gas pipe line. With respect to natural gas finding a leak quicker than air, my opinion is based partly on theory and partly on inference of what natural gas would do as compared with other gases with which I have conducted experiments.

153 DAVID FLEMING, a witness called on behalf of the plaintiff, testified:

I live near Rensselaer, in Jasper County, Illinois. Am farming. In 1890, was working on a railroad, and in unloading pipe for the Columbus Construction Company. That was in August. I

was employed by Mr. Button. I unloaded pipe from cars at Ainsworth, Sudley and Whiting. We went back and forth between the various places. I first worked at Ainsworth. At first in unloading pipe, we would roll them down and lift them down without a rope. Skids were put on the side of the car, and notches hewed in so that they would lay next to the car until we could get our rope on the pipe. Then we would let them down by rope. There were four men in the car engaged in lifting the pipe on the skids, two at each end. One end of the rope was fastened on the car and the other end was held by a man. There were two ropes and two men. The pipe were rolled back on the ground, and plank was placed between them in the pile. Some of the thread protectors were off in the car. We put them on before rolling the pipe out. Some of the thread protectors had paper on the inside. I helped to unload pipe at Sudley, which was a place about the same as Ainsworth. We unloaded it in the same way as at Ainsworth. I also helped at Whiting. They unloaded at whiting in the same manner as at Ainsworth and Sudley. There was a ravine north and west of the pumping station. I helped carry pipe down to the bottom of the hill on the west side. We carried it with tongs. I should think this place was a mile from the pumping station.

*Cross-Examination.*

They only unloaded one car of pipe at a time when I worked for them. The last time I was along the line was in the fall of 1890. They were covering the pipe with dirt. I have seen them unload pipe. Always one joint on one side of the wagon and one on the other; then they drove ahead. I never knew there was any trouble with the line; never heard there was any. I don't remember how heavy the joints were. I never saw them strike each other; never saw one go against the other unless there was something between them. I made no noise. Mr. Button is the man I last talked to about what I would testify to in this case. That was last night at the Clifton House here in Chicago. There was no one present that I knew except Mr. Button, or had ever seen before. I didn't tell him anything about what I would testify to. I talked to Mr. Custer this morning in his office. Mr. Frame was present.

Q. And you told him the same story that you have told us here, I suppose, didn't you? A. We wasn't talking.

Q. Did you talk about the case at all? A. No, sir, not about the pipe, no, sir.

Q. You didn't talk about that; how long were you there, did you say? A. Well, I wasn't there but a few minutes.

Q. Before that who did you talk to in reference to these matters? A. I didn't talk to nobody.

I worked at unloading pipe a couple of months, I presume. I don't remember Mr. Bloom. I remember a German, Bloom isn't his name, though, I think. He helped unload pipe. The pipe  
 155 didn't go down rapidly while I was unloading. I never told that before to-day. I never thought of it before to-day. I never told it until I told it to the jury.

*Re-direct Examination by Mr. Custer.*

Q. Do you know Mr. Barnard? A. I believe not.

Q. Did you ever have any communication from him asking you to testify in this case? A. I believe I did; yes, sir; I had a letter.

Mr. CUSTER: That is all.

*Re-Cross Examination.*

Q. Have you ever been written to by Mr. Barnard? A. Yes, sir.

Q. Let us see the letter?

(Witness produces letter.)

Q. Did you come in answer to this letter? A. Sir?

Q. Did you come in answer to this letter? A. No; I got that letter before I started; I got a letter from Mr. Button to come.

Q. Let us see his letter, and see who wrote the better letter?

A. I don't know where that is; I haven't got it with me, I don't think.

Q. You were pretty well written to, weren't you? A. I guess so.

(Witness hunts in his pocket and finds Button's letter.)

I got the one with money in it from Button last; I only got money from Button once. After I come to town Button found me, but he didn't say a word about how the pipe was unloaded.

156 The following was read in evidence, as Defendant's Fleming Exhibit D.:

CHICAGO, Ills., November 4, 1897.

*David Fleming, Esq., Wheatfield, Jasper Co., Ind.*

DEAR SIR: The case of the Columbus Construction Company against Crane Company will come up for trial in a few days in the U. S. Circuit Court in this city. When this case was last tried a number of the persons who saw the gas line laid in '90 near Ainsworth Station, came to Chicago for me to testify, among whom were Messrs. Potter, Chester, Barney, Ols and sev-



eral others. I understand that you had something to do with unloading the pipe at Ainsworth Station and hauling it to the line, and from what I can learn believe your testimony will be of some value. I would like very much to have you come to Chicago to testify for us, and in case you can make it convenient to come in here for one day, we should be very glad to pay your expenses and pay you for your time.

I wish you would write to me upon receipt of this as to whether or not you are willing to come, and in case you are I will send you enough money to pay for your expenses and time here, and let you know when we will want you. We probably will want you some time between the 15th and 20th of the month.

Please let me hear from you at once.

Yours very truly,

(Signed) J. H. BARNARD.

The following was read in evidence as Defendant's Fleming Exhibit B:

157

WESTERN SPRINGS, Ill.,

Oct. 9, 1897.

*Dave Fleming, Esq.*

DEAR SIR: Enclose you \$3.00 car fare to Chicago. I would like you heare Friday Nov. 12th. Come to 148 Michigan Ave., 2nd floor, & enquire for Me at Columbus Construction Co's. Office.

I am going to Ainsworth & Valpraiso To Morrow.

Yours in a hurry.

(Signed) BUTTON.

JOSEPH PITT, a witness called on behalf of the plaintiff, testified:

I live in Hobart, Ind. Have lived there for five years. Follow painting and paper hanging now. In 1890, I lived in Lake County, a mile and a half from Deep River, south from the pumping station. I was employed by Mr. Button to unload pipe on the line in the field. I did not unload at railroad stations. I think I was employed from September until cold weather set in. I helped to unload west and east of the pumping station, almost two miles east, and about a mile and a half west. The pipe was unloaded one end at a time. The back end was lifted up on the wheel and balanced, and the front end laid off, and then the back end laid off. I think there was seven men engaged at the time in doing it. The pipe was unloaded, one on each side of the wagon. This was done before the ditch was dug. I helped to dig the trench both



east and west of the station. I helped to unload some pipe 158 at the ravine near Chester's farm. We unloaded a few on the ground in the same way I have indicated. Then we laid sticks, such as we could put up there, and put them on top and piled more pipe on. The right of way down through the ravine is sixteen feet. The trees on the right of way had been chopped off. I did not help to put pipe down into the ravine, nor dig the ditch there.

*Cross-Examination.*

I can't tell how long I worked for the company, probably four weeks. During that month, there were about five miles of pipe strung in the neighborhood of Deep River. Button told us to string the pipe on each side of the wagon. I couldn't tell anything else he told us to do. About three weeks ago, Button was at my house, and he asked me if I remembered about how the work was done. I told him I did. He did not tell me how it was done. I can't say how many loads there were of the pipe at Chester's farm. The Chester I refer to is Henry Chester. The railroad runs through his farm, rather north-west and south-east. The pile might have been five feet high, possibly ten feet wide. The sticks were put between the pipe to keep the thread from getting damaged. The pipe had thread protectors on. Sometimes the driver helped to unload pipe, sometimes he did not. As a general thing, there were two at each end unloading. Part of the time we unloaded from both sides of the wagon at once, when they had men enough. It depended largely on the ground.

ELIAS FLEMING, a witness called on behalf of the plaintiff, 159 testified:

My business is farming. I live in Valparaiso. In 1890, I was living about six miles south-east from Ainsworth, and was employed by Mr. Button for the Columbus Construction Company, in unloading pipe from cars, and loading it on wagons. I worked at Ainsworth and Sudley in August and September.

(The witness here detailed the manner of unloading pipe from the cars in substantially the same way as stated by the witness David Fleming.)

*Cross-Examination.*

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The per cent of thread protectors which we found in the cars was small. I don't know as every car had some loose ones in it. When they were off we put them on the pipe to protect the threads from getting jambed in unloading. I did not tell Mr. Barnard last Monday that I had seen them roll pipe down the skids without ropes. I told it to him the same as I have said it here. He asked me to come and be a witness for Crane Company. And I said I would go if I had to. When the pipe rolled down, it naturally made a dead kind of noise. It would strick the wood between the pipes. I never saw a thread protector knocked off in unloading, to my knowledge. I have talked with Mr. Custer, the attorney, at his office, since I came to Chicago. Also with Mr. Button, but not long, about the details of the case. Button did not tell me how we unloaded the pipe.

*Re-direct Examination.*

We put up pieces of wood 4x4, between the pipe that was on 160 the ground and that that rolled down the skids.

*Re-cross Examination.*

We took the rope off the pipe before it struck the stakes. We had a half hitch of rope on the pipe and threw it off at the end.

JOHN H. MARSHALL, a witness called on behalf of the plaintiff, testified:

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I live three miles south-west of Valparaiso on a farm. In 1890, I worked for the Columbus Construction Company, in the months of September and October. I was hired by Mr. Button to haul pipe from Ainsworth and Sudley. Helped to load pipe on wagons at Ainsworth, and at Sudley. We load them on wagons one end at a time. I hauled from Ainsworth toward Hobart. I hauled from Sudley west and south of the pumping station. I helped unload pipe along the right of way. The pipe was taken off one end at a time and laid down.

*Cross-Examination.*

Have lived in that country twenty-nine years. Worked only a couple of weeks. The drivers helped to load and unload. In unloading we calculated to lay the pipe about as they would come together. I think we unloaded on each side of the wagon. There were usually four to six men unloading pipe besides the drivers. I should say from four to five men. Elias Fleming spoke to me about coming here as a witness about the middle of last week. I talked with Mr. Button about the case since I came to Chicago. Levi Frame also invited me to come here to testify.

WEDNESDAY, November 17, 1897.

161 GEORGE KLEINE, a witness called on behalf of the plaintiff, testified:

I live in Merrillville, Ind. I buy livestock and ship it. In 1890 was working on the pipe line at Ainsworth. That was in August and September. I worked about three weeks, and was hired by Mr. Button. At Ainsworth I unloaded pipe from cars, and also helped to load on wagons. In unloading from cars I had hold of the rope.

(The witness here describes manner of unloading substantially the same as the witness Dave Fleming.)

In loading pipe on wagons we lifted one end first, and then the other. I helped to unload pipe along the line. We lifted up the hind end on the wheel or bolster and balanced up the front end, and then let down the front end and afterwards the hind end. We unloaded on both sides of the wagon. That was before the ditch was dug.

*Cross-Examination.*

The pipe as it was unloaded from the cars was put on piles. I should judge there were not over three piles at Ainsworth while I worked there. The men that used the ropes stood outside of both the skids. I was not present when any of the piles was started. The piles had a carload or two in them before I came. In order to get the pipe up on the pile they used a plank, and the men rolled it up on the plank. Once in awhile I notice in the field that the thread protectors were off, probably as often as two or three times a day. I didn't look to see if the threads had been injured.

I think when the protectors were off the pipe were shoved back a little further on the wagon. I never put a thread protector on, 162 but have seen them put on at the car. That was done by the men in the car when they were found in the car. I saw some rolled down from the cars without protectors when they could not find them. When I started to work these piles had been built up to about my breast, then we worked them up higher. In unloading from the wagons we balanced the second joint off the same as the first; we would leave them laying on the ground, sometimes a couple of feet apart. That is the way we did all the time I was in the field. Joe Pitt was with me most of time I was there. I unloaded one off from one side and one off from the other. I talked with Button, Fleming and some of the other witnesses about this case since I come to town. I don't think I told Barnard and Potter that we let the pipe go down without ropes, or any words to that effect. I did not tell them that the pipe rolled down very fast and made a loud noise, nor that we threw the pipe off from the wagons. I don't think I told them that one end of the pipe would go down before the other frequently and strike the pipe that had been unloaded before. I don't know whether I told them that or not. I don't think I did.

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CLEMENT HENDERLONG, a witness called on behalf of the plaintiff, testified:

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I live in Valparaiso. For the past two years have been working at the carpenter trade. In 1890 was a farmer and lived in Porter county, about two miles from Sudley on the Grand Trunk Road.

In the last of September, 1890, I was employed by Mr. Button to haul pipe for the Columbus Construction Company. I helped to load pipe on the wagons at Sudley. I drove a team back and forth.

163 (The method of loading pipe on the wagons at Sudley was described substantially the same as by John H. Marshall.)

I think I hauled east from a point a mile and a half east of the pumping station.

(The witness described the method of unloading from the wagons substantially the same as the other witnesses.)

*Cross-Examination.*

I worked three or four days.

of Hender- JOSEPH HENDERLONG, a witness called on behalf of the plaintiff, testified:

I live in Valparaiso, Porter County, Indiana. Am a carpenter. In 1890 was a farmer. I hauled pipe for the Columbus Construction Company at that time. I helped to load the wagon with pipe.

(Method of loading is here detailed substantially the same as by the other witnesses.)

We strung the pipe, which was hauled from Ainsworth, both east and west from the pumping station, I think a mile west and three-quarters of a mile east. The pipe was loaded on wagons at Sudley in the same way as at Ainsworth. This pipe was distributed east of the pumping station.

*Cross-Examination.*

I worked about three weeks doing various things.

of Blohm. CHRISTIAN BLOHM, a witness called on behalf of the plaintiff, testified:

164 I live a mile and a half from Ainsworth. I am road supervisor. In 1890 I worked for the Columbus Construction Company, unloading pipe from the cars, and loading it on wagons, at Ainsworth and Sudley. We used a rope to load it on the wagons. In taking the pipe off the cars at Sudley and Ainsworth, we slipped it down on poles, and used the rope.

*Cross-Examination.*

I worked first at Ainsworth. I worked two seasons for the Company; the longest season was at Ainsworth. When I worked I stood on the inside and on the outside of the car. I had the rope in my hand which we used. The pipe could not strike the other pipe. We had poles between them. They did not strike pretty hard against the pipe which had been rolled down. When the pipe went too strong, we got a scantling and set it up so that it could not touch the other pipe. I told you the other day, down at my home, that the second pipe would strike the first, and knock the protectors off. I suppose I told you right. You didn't under-

stand what I told you. We had a long pole there. I told you that when the pipe was jerked out of the car, that this rope, it would go off at one side, and that the man found fault with me because my end was slow. That sometimes the end of the pipe with the collar would roll down and strike first and my end would be up in the air. I told you that the second year they were careful not to knock the protectors off and to hurt the pipe. There was lots of pipe hurt in 1890, from unloading, so that the end was bent in.

I didn't tell you that it got struck on the other pipe. I told 165 you that it was bent, and that I didn't believe that the way they were unloading pipe it would ever hold anything. You told me down at my house that you would want me as a witness in this case, and that Mr. Barnard would come down and tell me when to come, but he didn't come. Button told me to come here. I told you that some of the men were spoiling the threads by letting it down that way.

*Re-direct Examination.*

I helped unload pipe in 1890 and 1891 at Ainsworth.

Q. Don't you know that there was no pipe unloaded at Ainsworth in 1891 at all? A. Well, it was about fourteen days ago that she had unloaded the pipes there when I come down there.

JUROR: I think we ought to have an interpreter. It strikes me that the witness is answering at random part of the time at least. It seems so mixed that it tends to confuse me in his answers.

WITNESS: I couldn't speak much English. I understand German.

Q. You understand English pretty good, don't you? A. Nicht goot.

(Thereupon a juror acted as interpreter.)

Q. Did you understand what the attorney asked you? A. Yes, sir.

Q. ALL? A. That I can't say that I understood all of it or not.

Judge WING: Ask him if he answered any questions that he did not answer well. A. Well, it may be.

Q. Now let me try him. A. I believe that he may not un- 166 derstand me while he was out in the country.

I told you that one end flew down first a great many times and struck on the thread and spoiled and hurt the thread; I told you the truth that time as well as now.

BREWER BUTTON, a witness called on behalf of the plaintiff, testified:

I live at Western Springs, Illinois. I was working for the Columbus Construction Company in August, September and October, 1890. I had charge of unloading pipe and stringing it in the field at Ainsworth and Sudley. I unloaded some at Whiting. I was at Ainsworth at the commencement of the unloading. I had charge of it.

(Witness described placing skids on cars same as witness, Dave Fleming, described it, and then said they would pull pipe up sometimes with ropes out of the car; then they would roll them down those skids out into the yard; sometimes they would use ropes, if the piles were close enough to the car, and ease them down into the yard; other times they would roll them down into the yard without ropes before they got the pile large enough so that pipes would go down with force to injure them.)

I superintended the distribution from Ainsworth and Sudley. The pipe was lifted in wagons by the men. Sometimes skids were used. They first picked up one end and put it in the wagon, and then the other. When skids were used they were put on the top of the wheels and ropes attached to the stake of the wagon and the pipes pulled up. This was only done when we were short of 167 help. The pipe was unloaded from the wagon by first lifting up the hind end on to the stake and balancing it, and then lifting down the front end, and then dropped or slid the hind end on to the ground. The pipe that was distributed along the Deep River pumping station came from Ainsworth. I know the ravine near the Chester farm. The pipe was unloaded there at the top of the hill. A horse could not go up the ravine. After they got to the foot of the ravine they were pulled out by a horse. The pipe was unloaded from each side of the wagon wherever it could be done. There were places where it had to be unloaded from one side only. The pipe from Sudley was used as an extension of the pipe beyond Deep River. After we commenced stringing pipe I was in the yard and field. I usually went to the field twice a day. I should think it was seven or eight miles. I was at Ainsworth a couple of weeks. I can't tell whether I was at Sudley when they commenced or not, but I was at Whiting. I was at Whiting about the time whilst they were unloading. I think that the paper marked "Exhibit O" is a copy of the instructions which I received. I fulfilled them to the best of my ability.

*Cross-Examination.*

I was in the livery business before I worked for the construction company. After October, 1890, I was in the restaurant business in Chicago. I am now manufacturing furs in Cleveland, Ohio, but reside in Western Springs. Prior to the summer of 1890 I had had no experience in handling large sized pipe. I read these instructions over a number of times. I think I got them by mail. I can't say when; I should say somewhere about the 20th of 168 August. I think that Mr. Harper had charge of carrying out the instructions at Sudley while I was in the field. He was the man I boarded with. He was a farmer. So far as I know he had had nothing to do with pipe before that time. I did not examine all the joints for blisters, cracks, holes, and so forth, but did measure and tally and weigh all the pipe. That is, not less than four or five joints to each car. I can't remember how much the pipe weighed per foot, but think twenty-five or thirty pounds. I had had no experience which would qualify me to inspect the threads and couplings and determine whether they were perfect or imperfect. I think we used to put about a car-load down in one course at the bottom. That we would let go down without ropes. According to the condition of the yard, we put the next load down on the ground or piled it up on other pipe. We would let a car-load of pipe go down without using ropes. We built piles as high as a fence, making four or five tiers of pipe. I know some of the pipe was let roll down the skids without rope. I don't think one-third of it was. I don't remember that I ever saw one joint bump against another when it rolled down from the skids. I will not swear that it did not do so, but did not see it strike so that the thread protectors flew into the air. We had eight men in our gang, not including myself. Two of them stood out by the handspikes and two on the ground by the car, and four in the car. This was at Ainsworth. In stringing the pipe two or three times we came to a piece of woods, and it would not be convenient to unload the pipe on opposite sides of the wagon, so we put them off on one side. At one place the woods was nearly a mile long. I don't 169 remember how many wagon loads were unloaded at Chester's ravine. I saw one load unloaded there. I didn't see any of the pipe carried down the ravine by the men. When I spoke this morning of its being carried down the ravine I meant that was the way I told them to take it down. I don't know of my own knowledge how it got down. Instead of unloading over the side of the wagon I have on a few occasions seen the pipe pulled off from the end of the wagon. I remember instances when teams got stuck in the swamp hauling pipe to the line. I didn't see them unload pipe



where they were stuck in the swamp. I know they unloaded pipe to pull out. I don't know whether they unloaded it or pitched it off one joint on top of another. The soil in the ravine was not stony. It was a wet black loam. I don't remember that there were any stones on the side of the ravine. There were stumps there. In unloading from the wagon after lifting the front end off they would lift the back end over the wheel and generally let it drop part way. If we were in the woods or some place where there were stumps we would support the end until it reached the ground; otherwise we would let it go. I have seen pipe unloaded by pulling a joint out at the tail of the wagon, let one end rest on the ground, then start up the team and let the other end drop. This was not done a good many times.

EBENEZER HILL, a witness recalled on behalf of the plaintiff, testified:

I am familiar with the properties of natural gas, and the transmission of the same. Our company designed and dealt in natural gas pumps, and have put in a number in Indiana, Ohio, Pennsylvania and Canada since 1890. In every pipe line we have to make provision for accidental strains which will come in addition to what is considered the normal strain. It is subject to accidental strains from unequal settlement of the ground, changes of temperature. Also, where a gate is accidentally closed without notifying the pumping station, or if the gate drops off the end of the spindle which holds it, it will close up the pipe, and the pressure increase rapidly. Those gates are valves in the pipes for shutting off the flow of gas. In such case, the pressure upon the pumps and upon the line will be the same. Where the gate closes, the first effect is to stop the flow of gas, and the pressure will at once begin to bank up from the fact of closing. Then the pump, keeping on working, will pack the line full of gas, and the pressure will go up to the limit of the capacity of the pump, or the line—something will burst, or the pump will stop. If the pressure were 300 pounds, and the gates were closed, it would depend upon the position of the gate and the distance from the pumping station, and the number of pumps, and the speed of pumps, as to how long it would take for the pressure to run up to 600 pounds. A line should be tested to a considerably higher pressure than the working pressure. I should think that double the ordinary working pressure was reasonable.

*Cross-Examination.*

I have constructed about eight stations in this state for pumping gas, and in so doing came in contact with the conditions of pipe, its carrying capacity and the pressure to which it is subjected. I have been personally present at the construction of the stations in a number of cases. I was not present at all of them, nor all the time, but made visits from time to time to see how the work was carried on. I should say I was present at four after the work began, and others before the work began. At all of these places I approved or put up the stations—I designed them. In several cases, the pipes were laid in the ground, and were being fed with the natural pressure, and I was obliged to go there and see what was necessary to do to produce artificial pressure. Sometimes the lines were exposed and sometimes covered up. I think only two were exposed before any pumping stations were put up. I had nothing to do with laying the pipes, but was responsible for testing the gas lines. I have been responsible for laying a 10-inch line ten miles, producing 200 pounds pressure at the other end. It was laid under my charge. I was responsible for the testing of the line, but not for the laying of it. I did not ever know of a gate valve dropping accidentally. There are gauges to indicate to the man in charge of the station, while he is operating the engines, the number of pounds pressure. It would show the pressure if he was looking at it, but in a station like Greenstown there are eight or nine pumps pumping into the line. As a matter of fact, the man who attends them may be only an oiler and may glance at the gauge once in a while. There are no electric indicators to give note. I put on four safety valves at a station to blow at 450 pounds. Two of them refused to blow at that pressure, and broke. All four were taken off. No man can stand looking at the gauge all the time. I never saw a man that can do it, and a gauge according to the position of a defect in the valve, might jump up in five minutes. These gauges are the same as those on steam engines.

THOMAS FLAHERTY, a witness called on behalf of the plaintiff, testified:

I live at Liverpool, Ind. Am a farmer. I worked at Liverpool for the Columbus Construction Company, and was employed by William Hickox. I helped to unload and to load gas pipes. I helped unload the first pipe that came there. It was on sandy land and level ground.

(The witness here testified that the pipe was unloaded in substantially the same manner as was testified to by the witness Dave Fleming, except in this particular that they were skidded down without ropes until the first tier was made, then they put them down with ropes.

The pipe which I helped to haul was laid in the Calumet marsh, which is a swampy wet country. I have known it for forty-eight years. In order to be able to drive across it, we filled up a roadway with cane-brake, and used wagons with six-inch tires.

*Cross-Examination.*

I can't remember whether I unloaded pipe there one or two years, but helped to unload all there was unloaded at Liverpool. 173 pool. Jellison gave me orders about the work. He was there most of the time, nearly every day. I saw Mr. Button around the depot a few times. He is the man who came down to ask me to testify. Between the time I unloaded seven years ago and last Monday I haven't spoken to anybody about the way this pipe had been unloaded. Mr. Button asked me if I had worked on the pipe and I told him I did at Liverpool. This is all the conversation we had with anybody about it before I came on the witness stand. I talked with Gen. Hunt before I came into court in his office, but not what I was going to testify to. I didn't tell him what I knew about the unloading of the pipe. All I said to him was that I worked at Liverpool. We had six or seven men in the gang helping to unload the pipe. There were six in the cars, and two on the ground. We also had skids for the pile. The pipe would run down the skids from the cars, and up the other skids on to the pile. The unloading of the cars was done quickly. The men worked as fast as they could without hustling.

NICHOLAS FLACK, witness called on behalf of plaintiff, testified:

I live in Liverpool, Ind., and am a farmer. I have lived there ever since I was five years old. In 1890 I hauled pipe for the Construction Company from Liverpool, Hobart and Tolleston, with my own team and two horses. It was a common farmer's wagon. I hauled two days at Tolleston. We just picked the pipe up off the ground and put it on the wagon, and hauled four or five or six at a time. We hauled from Liverpool to the line between Calumet and Deep River. We hauled some in the marsh, I don't know how much. There were eight or nine teams hauling there. It was very soft. In unloading from the wagons, they let down one end on the ground, and then the other. There were six men doing this work. Both pieces of pipe were laid on the same side of the wagon through the marsh. The first pipe was pushed to one side before the second was put off. At Tolleston and Hobart the wagons were loaded in the same manner as at Liverpool.

*Cross-Examination.*

Us boys were talking about it afterwards, how the pipe was loaded and unloaded. I mean Mr. Flaherty and Russell. They are the only ones I talked it over with. I saw the lawyer, Gen. Hunt, this morning over in the office of the company, I suppose. Flaherty was there and Taylor and Russell. Gen. Hunt just asked how we done it; asked about the same questions he has asked here this afternoon. He asked Flaherty how he unloaded pipe from the cars, and he told him. I heard Flaherty tell Gen. Hunt this morning how he, Flaherty, helped to unload pipe from the cars, went over that carefully, how they lifted it up and how they put it down, how they protected it with ropes. How they did this and the other. They talked it all over with him in my hearing.

The men who unloaded stood on the ground and reached in the wagon and lifted up the pipe, some in front and some behind. The farm wagons had no boxes on them. They lifted one end off and then another, and put it down easy enough, so that it would not jam. They did not put anything between the joints of pipe on the wagon to keep them from touching. They tied them together with a chain. There were scales for weighing at Hobart, and at Tolleston—not at Liverpool. I never saw any pipe driven on the scales and weighed at any of these places. I did not see anybody inspect pipe there. I got my load, and then

went back. Sometimes I might be there half an hour at a time. Sometimes they were unloading cars while I was there, but I didn't see any pipe thrown out as defective.

THERDORE ROSSOW:

This witness, upon direct examination, testified in substance that he was a farmer living at Liverpool, Indiana; that in 1890 he hauled pipe for the plaintiff from Liverpool, Tolleston, and Hobart to their line on the Tolleston marsh; that the pipe was carefully lifted on to the wagon, fastened with a chain binder, and lifted out of the wagons and laid down carefully; usually both strings on one side of the wagon; that the pipe line ran about two miles along the Tolleston marsh.

*Cross-Examination.*

Hickok would ride out on loads with us every day. He would ride with different ones. He has ridden with me. Then he would come back with us. We had from eight to ten wagons, and Hickok always rode on one of those wagons every trip. He bossed the unloading when he was there. We unloaded on one side because we did not have room to unload on both. We did not want them on both sides. We laid the pipe on cane where there was water. We put a little wisp of cane under the end of the 176 pipe. It happened several time a day that we would have to unload in the marsh on account of teams being stalled. I can't tell whether it was in 1890 or in 1891 when we hauled the pipe. I did not keep any track of the date. Seven or eight years ago, I think it was. Of course I never kept any date of it.

JESSE WILLIAM HICKOK:

This witness testified that he lived at Sissonville, West Virginia; that his business was teaming or heavy hauling; that in the fall of 1890 he hauled pipe for the plaintiff in Indiana from Liverpool, Tolleston, Hobart and Bennett Switch; that he had had previous experience in stringing pipe for oil or gas lines; that he brought some men and teams with him. He testified substantially to the same method of loading and unloading the wagons as testified to by the preceding witness, except that he said upon direction of Mr. Stanford they changed the method of unloading so as to lay off on

each side of the wagon instead of on one side only. He also stated that when they unloaded on one side they rolled the first pipe unloaded out of the way so that the other pipe would not fall on it. Witness also states that they hauled four to twelve joints of pipe on a load with two horses, the lengths averaging nineteen to twenty feet, very few as short as sixteen feet, and that in his opinion the pipe would weigh four to five hundred pounds a joint, and possibly more; that they hauled the pipe without any reference to keeping the pipe of one make together, so that they might have on one load pipe from two or three different mills; that when 177 pipe was loaded onto the wagons to be hauled into the fields he did not see anything put in between the joints to keep them from touching each other; that he never saw any pipe hauled out into the field that had no thread protectors on. Those that got off on the cars would be screwed on. That about two miles of a double line of pipe was laid while he was around over across the river and across the marsh; that part of the time he was working fifteen or twenty teams including his own; that the right of way was staked through the marsh before he went on it; that after the thread end was on the ground they would drop the forward or collar end off the front, and that he never saw any boards or planks or anything whatever between the pipe on the cars when brought to the various stations.

*Cross-Examination.*

Prior to this time I had never handled any gas pipe as large even as six inches. I don't know any difference in care required in handling pipe for oil or gas. I worked on the principle in 1890 what is good enough for oil is good enough for gas. I don't know that I realized any difference in 1890 between gas and oil in regard to their finding defects in a line. I didn't know in 1890 that it was necessary to be more careful in handling and laying a line for gas than for oil. I always had a horse that I rode from the stations to the field. First I would walk. I didn't have a horse at first. I didn't ride out on any pipe wagon at any time. In unloading the pipe they would lift the front end over the wheel and 178 might drop it to the ground. They would let the front end drop. The collar end was forward on the wagon. The thread end was behind. They would drop the collar end two and a half and three feet. That was generally the way they unloaded it.

JACKSON RAYMOND, called for plaintiff, testified in substance as follows:

Live near Corry, Erie County, Pennsylvania; have lived there fifteen years, am farming. In the fall of 1890 I was out at Deep River working for the Columbus Construction Company screwing pipe together; had had considerable previous experience in all kinds of line work prior to that time both for gas and oil in screwing pipe together by hand and machine. I commenced to work at Ainsworth laying pipe perhaps about the 20th of September right where the line came up out of the Deep River bottom running west and laid west a double line about two miles. There were twenty-five to thirty men employed with me in laying the pipe. Commenced laying pipe with machine; laid one short piece across a muddy place by hand. In laying pipe by hand the first thing to be done is to have the thread protector taken off from the joint of pipe and the pipe cleaned. One end is put into the jack, the other end into the collar. The man whom we call the stabber is the man who stands at the front end of the pipe and sights it to line it up. When he says it is in line they roll it up as far as they can by hand, then put on the tongs, four pair, handles six feet or more long, three to five men on each pair of tongs. When they first commence to roll it they brake stroke. When it begins to go harder they all go together. The jacks are made with heavy scantling 179 with a piece of timber framed on the bottom and iron at different heights to raise the pipe, then there is a jack board that stands slanting with notches in it to raise and lower the pipe. Sometimes we have to use three or four jacks to carry the pipe in line. We can't screw it up unless it is lined up. In order to prevent the first pipe from turning around when you begin to screw the second into it, what we call the back-up tongs are put on the collar. The end of the tongs is down on the ground on a block and holds the collar. The collars were cleaned out with steel brushes that were made on purpose to clean them with, twelve inches long, two or three inches broad, the wire two inches or more long. A swab is run through the pipe. The threads on the pipe were cleaned with the same brushes. When the pipe was picked up to put in we had men with an oil pail to oil and brush it off if there was any dirt got on to the pipe and also the collar. Lard oil was used to lubricate and make the joints screw up better. Had known black diamond and standard black to be used. The pipe-screwing machine is built on a regular traction engine so arranged that when the engine runs along the pipe-screwing machine is out



of gear, and when that is turned into gear the engine is out of traction, then there is quite a large crane that holds the tumbling rod to which the head is attached. The head is what slips onto the collar, with dies in it that catch the collar to turn it. The joints are put into the jack and entered the same as by hand, only when they are entered there are no tongs

used except the back-up tongs. When the head starts  
180 it grabs the collar tight and the power of the machinery rolls up the pipe and screws it up. The pipe is sighted by the

stabber just the same as by hand. The tumbling rod is perhaps seven or eight feet long and runs in and out about five feet and is perhaps three inches square, made of steel. Had from twenty-five to thirty men in operating this machine. I think the machine was the same one that we laid the line with in Kentucky. I think laying pipe by machine is the best method. We can't use the machine where the ground is not fit for it. If the pipe is put up to the proper place I don't know whether there is any difference whether it is put up by tongs or machinery; think it better by machine because in screwing it up by tongs if it runs hard the men are more likely to stop before the pipe is put up to its proper place. The men were directed to take the thread protectors off and clean the ends of the pipe and collar, putting a block or piece of rail under the end of the pipe. That was the way the work was done as far as I saw it. Thread protectors were principally old collars cut in two. I saw the pipe come up to the machine just before it was being screwed in. The pipe was cleaned; threads in the collar when I saw them just previous to their being screwed together were cleaned. I examined the condition of the threads on the pipe and on the collar myself. Also examined as to the character of the pipe itself before it was screwed up. There were quite a number of joints that I rejected and that were not laid; either the threads in the pipe or the collar would be bruised or show something bad that I wouldn't like to put it in. There were only a few joints  
181 that I rejected, anyway. I commenced to lay this line about one mile and a half west of the Deep River station. The pipe had been laid up to that point from the pumping station. The ditch had not been dug when I laid this pipe. All the pipe that I screwed was laid while I was there and slid over the ditch on skids, then we put the four-inch pipe across the ditch on a block on each side of the ditch, then put a rope around it and around the pipe, take a pair of tongs and turn the pipe and raise it so we could take the skids out and lower it with a rope, letting it rest on the four-inch pipe. There are other methods of putting pipe in a ditch after it has been screwed on the ground. I think the methods we used is as good as any. Sometimes the ditch is dug ahead and the

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line is laid down in to the ditch as fast as practicable after it has been screwed. It is put into the ditch in the same way. I never saw eight-inch gas pipe laid down in the ditch and screwed together in the ditch. I would think it would not be a very good way. We never did it except in some short places, under a railroad or some place where we would have to. In order to make it practicable the ditch would have to be seven or eight feet wide anyway, and in laying a double line of eight-inch pipe it would have to be at least a foot wider. I never in my experience heard of either gas pipe or oil line being screwed together in the ditch as a line. John C. Smith, the engineer who ran the engine, had worked for us before on the Kentucky line running the engine. I considered McFarland, the stabber, a good thorough man. I

didn't observe any defects in the way in which the 182 pipe was screwed together while I was there. It sometimes

happened that in screwing the pipe together that the jack would settle and start the pipe cross-threading. We had such cases. In such cases you have to stop and back the pipe out. We never put in joints that were cross-threaded. If pipe commences cross-threaded you can't roll it very far by hand. I don't think you could roll it at all by hand cross-threaded. What I mean by hand is with tongs. In lowering the pipe in the ditch with a four-inch pipe across the ditch on blocks, the rope is put over the eight-inch pipe and over the four-inch pipe in such a way that the four-inch pipe acts as a kind of windlass, turning the four-inch pipe with the tongs raises the pipe in a very easy way, then they hold the four-inch pipe solid with the tongs and let the rope slip to lower the pipe into the ditch. If pipe goes in cross-threaded it will not disturb the end the machine has hold of. That would not turn round and describe a circle. I never saw a case where pipe was started in cross-threaded but what the collar end the machine was on would remain as it was. Saw the air put on the pipe after I concluded screwing up, about the last of September. The pipe was still on the ground. I didn't notice how much pressure was put on that day, except I saw at the pumping station fifty pounds and something above that. I then went west over the line, walked the entire distance, three miles or three and a half miles. Saw leaks and heard them. Could hear the wind blow out in many places and see it also. Some of the worst leaks you could hear quite a good many rods. There were quite a good many leaks. The pipe was plugged up with four by 183 eight bushings at the end at which we had quit laying. When I found pipe would not screw in for any reason and backed it out, I examined to see why it would not go in. If the collar had been injured, that piece of pipe and collar would be laid out and I didn't put them in the line. Laid pipe in 1891 for the company at Winnemac. We laid it with the engine.

*Cross-Examination.*

In screwing up the pipe at Deep River I did not adopt any other or different methods from what I have employed in other eight-inch line gas pipe. Screwed up an eight-inch gas line near Louisville in 1889, or the winter of 1888 or 1889. Have never known since then how that line worked, since about a year after it was laid. It leaked some when I first saw it, could not tell how much; should think one joint in fifty any way leaked and perhaps more; probably a good deal more than that. The next line of eight-inch gas pipe that I had to do with screwing was this Deep River line. Prior to that time had never had experience in screwing together eight-inch gas line except the Louisville line, but had experience with smaller sizes of pipe. Laid a six-inch line for gas near Bradford which leaked a little. I presume we calked one joint in twenty directly after the line was completed; iron calking. I think gas is more likely to leak than oil. It would take from one to five minutes to screw one joint of pipe into the other pipe already laid in Deep River. It is thought good laying would be about four hundred joints a day where you are driving the work at its full capacity. A minute and a half a joint is as good a time as I ever made with eight-inch pipe. In a minute and a 184 half is as good time as I have ever made in screwing one joint of pipe into another with eight-inch pipe. I have heard of a good deal better time but have never seen it made. In screwing the pipe, one line would lie on one side and one on the other and the machine run between them. The machine lays all on one side of it so that the pipe on the other side had to be carried across. When it was laid it was all laid on one side, the two lines side by side; after we screwed it together. I was directing and supervising the work. I saw nearly all of the pipe as it was put into the machine. Paid no attention to the cleaning of it as a general thing as I went along. The cleaners would be ahead of the rest of the gang, sometimes three or four joints ahead. I examined the pipe myself, mostly after it was cleaned. I saw every joint of pipe on the line but not to make a thorough examination of every joint. I saw very nearly all the ends of the pipe where the thread is after the thread protector was taken off, but presume I didn't see every one. There were several hundred loads of pipe in the line which I screwed together and I rejected a few joints, about two pieces of pipe to the mile, on account of defective threads. It may not be just that. Of the eight that I rejected, some of the defects pertained to the collar, but I could not tell how many of the eight had the defect in the collar. Don't remember but one collar par-

ticularly but there might still have been two or three. I think one joint of pipe was what I considered ground off on the car, that was at the back end of the thread towards the body of the pipe. Other defects would be a poor thread, a thread cut on the pipe and 185 looked crumbly like. I should think there was not as much rejected pipe in this line as in other lines that I have laid. It was a pretty small rejection, less than in the Kentucky line. The pipe I laid at Deep River was threaded about two inches. This was the ordinary length, I should think. All, or very near all, on the pipe that I screwed together in Deep River had the thread protectors on the end before I put it together. Some of the way down in that country was all sand. The most dirt that was on the pipe was the chippings of the cuttings of the threads and in handling, of course, there is more or less dirt on whatever ground it is handled on. We did not wash the pipe with anything. There were two men engaged in cleaning the pipe with wire brushes; raised up the pipe and put the sticks under and took part in moving the pipe. Only one man used the brush. The collar was not taken off the pipe to clean it. Just as necessary to examine the threads in the collar as on the ends of the pipe, but those threads less likely to be bruised. Defective thread in collar just as detrimental as if on the pipe. I wouldn't say that I examined every collar or every thread-end of the pipe; presume I did not every one, but nearly all. The workmen ran a long steel stick with a steel circle on it through the pipe, then had a swab that ran through it. Back-up tongs were put on the collar at the end of the line to make it solid. If that was not done you would have to screw against the spring of the line. The man who stood at the collar end of the pipe which was being screwed had a hammer.

When the pipe would begin to tighten he would tap the collar a 186 little which would make it run a little better and he could tell from the sound when it was tight enough. This he could tell by the sound and the way it run and the looks of it. In the majority of instances they screwed the pipe into the collar until there was no thread observable on the pipe being screwed in. There is a little recess on the collar I examined. If the pipe were screwed in until we couldn't see any thread sometimes there would be two or three threads that would not be turned because the top of the collar would project a little distance over the pipe. You can nearly always see a little of the thread on the pipe as you walk along a line. The hammer used to tap the collar was a light black-smith's hammer. The man standing there by the collar occasionally puts his hand on it to feel for the heat, and in that way can tell whether it is turning hard, can also tell by the way the men work. The pipe used to turn so hard that the men at work on the tongs would get out of breath in screwing up the pipe. Sometimes it was a usual

operation on other lines for the pipe to turn so hard that the men got out of breath. Some pipe turns harder than other. A properly constructed joint screws up easily until the last. As a general thing pipe is put up as tight as they can screw it. The engine was an eight-horse traction engine. I have seen it get so tight as to stop the engine. That occurred perhaps three or four or five times a day. Perhaps a thread or two would be exposed when the engine stopped. It was very common to screw it up as far as the engine would run it. Sometimes the machine would tighten the collar 187 on the mill, made a whole turn, and sometimes it wouldn't start it, many more times it wouldn't stir it, but once in a while it would turn up. In that respect the operation of screwing pipe by machine is different from hand process. Where tightly screwed up by hand, the back-up tongs in the field are frequently put on back of the collar. Sometimes the collar is turned. Stabbing with a machine is exactly identical with the way it is done by hand. The machine has nothing to do with it. In cross-threading one revolution of pipe would destroy one thread. Two revolutions two threads. If you happened to be in two or three threads and the jack happened to slip and let it drop, the same cutting of thread would result as if it was set badly. The pitch would be down instead of sideways. When I went over the line at the test referred to, the pipe was in the ditch, I should think, about a mile west of the station. That portion in the ditch was not covered. I should think more joints needed calking than in other lines that I have laid. The line I laid in Deep River was generally pretty level. We bent some pipe; bent the pipe in the middle. We made easy bends. Made three bends; could not tell what degree they were bent. I never attempted to bend an inch pipe without a fire. Other men have done it, but I never tried it. The weather was not very hot when I was down there—it was the last days of September. Didn't get any chance to see the effect of the atmosphere on the line. Should think more than one in twenty of the joints in Deep River leaked; much worse than where I was before.

I should think there was a leak oftener than one in ten joints 188 on this line. We applied lard oil to the collar and not to the pipe. In some lines we sometimes use crude oil, but in main lines always use lard oil. I have seen standard black and black diamond used. I have heard of other things being used.

*Re-direct Examination.*

My machine never screwed up four hundred joints a day at Deep River. I should guess somewhere from two to three hundred, not to exceed three hundred any way. I don't think we screwed two hundred and fifty very many days. In screwing up the pipe we did not sort it out and try to keep one mill's make separate from another mill's make.

J. A. LAMBING, a witness for plaintiff, testified in substance as follows:

Live in Pittsburg, and have lived there a little over eleven years, and contracted in oil and gas lines. From 1886 to 1891 have had experience in laying pipe lines for conveying gas; very little since 1891. Built a gas line in 1873 in Butler County, Pennsylvania. (Witness proceeds to detail his experience in this general line.) Worked for the Columbus Construction Company, in charge of the Winnemac division, beginning in the latter part of August, 1891, until they closed up that winter. Looked after the laying of the line and the taking up of some that had been laid and the re-laying of it. Took up about four thousand feet of line. Began on the west bank of the Kankakee river, ran west, the latter part of October or first of November. Was eight-inch pipe. Pipe that was below the level of the water had water in it. It was 189 plugged at each end with cast-iron plugs. Took off the collars that were on it, and relaid most of it with the heavy couplets right at the same place where it had been laid. As we relaid the pipe we examined it as to the condition of the joints and the thread on the pipe and in the collars. If there was any cross-threading in putting the pipe together, that fact would be determined when it was taken apart. We didn't see any threads that had the appearance of having been crossed. I examined some of the pipe as to the taper of the thread. A portion of it was uniform taper, and part of it was not. I examined some of the collars, some of them had proper taper, some of them had about an inch and a quarter taper. Correct taper in a standard line is three-fourths of an inch to the foot. Some had no taper at all. I suppose I examined perhaps thirty or forty of the collars taken off the pipe which had previously been laid at the Kankakee River. I made an examination of some collars taken off pipes that had not been laid east of the Kankakee River. Some of these collars had short taper. Some were straight without any taper. We found some evi-

dence of lamination where the iron was not fully welded together. Threw out a number of joints on that account. Some cinder holes in the pipe, on account of which we had to throw it out, and we found a couple of holes after the pipe had been laid and tested, had to put saddles on them to close them up. A saddle is a piece of cast-iron on one side, and a stirrup of wrought iron comes around and is bolted through. Sheet lead is placed between the saddle and the pipe. Where such a hole is found after pipe has been 190 put into the ditch, it is necessary to dig a hole large enough to get at it to work so as to get the saddle on. Water in a gas line is not desirable. This pipe that I have described I assisted in relaying, and it was relaid with the heavy collar, termed the Hequembourg collar. We laid the pipe strung along the line known as the Crane pipe, from which we removed the collars, with the heavy collars, the Hequembourg collars. After laying it we tested it with air with a pressure of six hundred pounds. There was a good deal of leakage before it was calked with lead. The defects were repaired by running them with lead and calking them up. The majority of joints had to be run, and it took considerable time to do it. After the calking was done, a portion of the pipe was tested, a by-pass. We calked it up and tested it until it stood the test. The pressure stood at so nearly six hundred pounds that the fall in twenty-four hours, if I remember right, was ten pounds.

#### *Cross-Examination.*

Was in the flour and feed business from 1892 until the spring of '96. Have not done much pipe business since the spring of '96; only done two in the last year and a half, eight-inch pipe, short line. The line I laid in 1873 was four-inch line operated with well pressure. Did not let full well pressure into the line; was in Butler county, Pennsylvania. The line I took up was not connected in any way with the Deep River section. When I relaid the pipe we took up I paid no attention to keeping the pipe of one make together, and that was so as to the pipe that had been 191 strung but not screwed up; didn't rethread any of the pipe; threw out some joints of pipe, possibly twenty altogether, out of four or five miles. Did not examine the collars for the purpose of determining whether to reject them or not. I had been instructed that the old collars were to be taken off and Hequembourg collars substituted. Joints that were rejected on account of defective welding were those that had not been in line, and I would think a careful inspector could have seen what I saw in this regard when the pipe was received over the sides of the car; found some pipe with defects in the way of laminations laid in the line. I

should think a careful inspector could see that before the pipe was sent to the field. This pipe was strung along but not screwed up. Rejected one-half dozen or more pieces of pipe for cinder-holes. This pipe had not been screwed up. It cannot always be detected by careful inspection. Some joints were rejected because the thread was crumbling. The iron, evidently, had been heated too hot. I couldn't state how many joints there were. I believe I made a report showing what pipe I rejected, and for what reason. We usually reported everything that happened along the line. The reports were sent to the Chicago office; made by a clerk in the office at Winnemac; looked over my reports; am not sure I signed them; I don't know that I ever knew a line of pipe to be laid that did not leak to a certain extent at the first test, though I knew an eight-inch line of pipe to be laid that did not leak at the first test enough to admit water, had lain in water for a year. Found no signs of cross-threading. The pipe, when I got there, was not strung; 192 I had it done; the pipe was taken out into the field principally, and collars taken off there; we took collars off in the field; think I found some short taper in the pipe; thread was, I think, about two inches and a half on the pipe. Unless the full thread was tapered I called it short taper; could not reject any pipe on that account; found some evidence of short taper in the collar; the collars which I examined for taper were collars we had taken off for the purpose of throwing away. The reason I examined collars for taper was because I heard Mr. Smith and Mr. Hequem bourg talking about it. My standard of correct taper at that time would be between three-quarters and five-eighths of an inch. I would regard the pipe as properly tapered if it was three-quarters or five-eighths, or anything between if it was all the same. You could make a tight line if the collar and threads were the same taper, either five-eighths or three-quarters; is important to have the taper on the pipe and in the collar extend the same distance. The collars I examined for taper with the calipers weren't the old couplings; they weren't the Crane collars. They were new collars that the National had shipped into Winnemac. It is proper to screw in pipe within a thread or two, at least, of the end. I don't know whether, in the course of my examination at the last trial, I said anything about determining the presence or absence of taper with steel rule, or about any examination I had made, such as I have now described. It may be that yesterday was the first time that I ever mentioned to anybody since the fall of 1891 about the examination of these couplings and the application of 193 steel rule to them. I think about two miles of Crane pipe and Hequem bourg collars was tested until it stood the proper test. When the line laid with Crane pipe and Hequem bourg collars first



had the air turned into it it was at that time connected with other pipe that was not Crane pipe, that had been previously laid. The joints leaked at both ends badly. We had some leaks in the new pipe with the Hequem bourg collars and had to calk them, but not a great many. I think they averaged about thirty-five joints to the mile. The Hequem bourg collar was made especially for the purpose of calking with lead. It was contemplated in using the Hequem bourg collar that every joint should be lead calked as far as necessary. Prior to that time I had never known any other line that was laid with preparations in advance for calking every joint with lead. The taper in the Hequem bourg collar was cut at five-eighths of an inch. I measured two or three Hequem bourg collars at Winnemac for the purpose of determining what slant the taper was cut. I measured with calipers. The difference between five-eighths and three-quarters to the foot in two inches is very slight. Am not sure that I made any record of this measure. If the Crane pipe and Hequem bourg collar were not the same taper they would not make as good a joint as though they were both the same taper.

Testi  
J. A.**MARTIN HENRY MOSIER:**Testi  
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Live in a suburban town adjoining Pittsburg; was employed by Columbus Construction Company in Indiana in 1890; prior to that time had considerable experience in connection with laying and operation of gas and oil lines. I superintended the construction of the plaintiff's pumping station at Deep River in the summer of 1890. It was finished as early as September 10, 1890, and ready to run with a low pressure pump. That pump had a capacity of over one hundred pounds. About that time there were two sections of pipe laid running east and two running west from Deep River. The north line east when we put air into it for the first time was laid 12,750 feet; the south line east 12,728 feet; the north line west 20,728; the south line was 20,610. The north line east was pumped up to less than one hundred pounds on September 17th. Went over the lines with pressure on; found many leaks at the joints. Went over the north line east under instructions from Mr. Smith to stake 64—that is, 6,400 feet. I found seventy-nine leaks at the mill end and thirty-three leaks on the field end at that distance. Examined each separate leak and marked it. Went over the line with a man with a soap cup and a pipe lead cup, and when the whole thing was complete a report was sent to the Columbus Construction Company. Remember when Mr. Hequem bourg came down from Chicago with Mr. Kilgore and Mr. Forman about the 1st of October. On that day we had



pressure on the entire system. Got some calkers and that day we calked a few joints on the line running west at different points on the north line. This process consisted in splitting the coupling in a manner or drawing it down to the iron with a proper tool and hammer. The different couplings varied in shape. The high pressure pump came when we had it completed ready for business, about the 28th of October. The result of this calking was that we got most of 195 the leaks stopped and the line fairly tight under a sixty pound pressure. About the 28th of October we pumped the north line east to about two hundred pounds pressure. It was reasonably tight at that pressure, and the calking seemed to stand against that very well. About the 5th or 6th of November got up to a pressure of six hundred pounds on the north line east and five hundred and fifty pounds on the south line east. This pressure developed a good many leaks, a good many new ones and some of the couplings that had been calked broke out again and began to leak. I made some memoranda as to these leaks. This memorandum book that I refer to now was made the day the high pressure was on the pipe. I tallied the leaks by marks as I walked along; made them in the book as I walked along, marking each joint in its proper place; 410 new leaks developed by the increased pressure. The highest the pressure got at any time was 610 on the north line east. It was not 600 all the time. Many new leaks developed on the north line east and a good many of the joints calked were leaking. Put pressure on the west lines, but could not get up higher than a little below 400 pounds. The leakage in the line was such that we could not increase this pressure. The number of leaks were about the same as those on the lines east. Afterwards reduced the pressure to 200 and tried to calk until the middle of November. It got to raining in the latter part of October. The ditch got very wet. Was expensive, almost impossible to calk it. Continued to work until about the middle of November, the 16th or 17th, and then abandoned the whole thing. The west lines were not tight at 400 pounds pressure. I have a few memoranda to make the ditch crooked in order to get in plenty of pipe so the expansion and the contraction due to changes of weather will not affect the joints. The ditch was not straight. Remember unloading eleven cars of Reading pipe that came in box-cars, which we pulled endwise out of a hole fifteen or eighteen inches square in the car. Saw pressure on a line of pipe laid at Greentown. I have got a memorandum here I made at that time. It was torn out of my book. I refer to it. I saw a pressure on that April 4th, 1891, I think at 1:15 P. M., pressure 307; 3:25 P. M., 284. In a thousand feet of eight-inch line pipe, I have it here;

that is all I have in regard to the pressure on the lines. Saw some leaks and noticed that the gauge was going down. Wasn't a tight line, but was not leaking very badly. Pumping station stood right on the bank of Deep River near the mill pond.

*Cross-Examination.*

On the Indianapolis line I tested the general appearance of the iron was different. It looked there to be made of good iron. I should say some of this iron looked to be bad iron. This is the first time I ever mentioned this. This is the third time I have appeared here. Standard eight-inch gas line collar I should say weighs between nineteen and twenty-five pounds, according to my best judgment. It would be in rough numbers between a quarter and three-eighths of an inch thick. Hammer is used to help screw up a joint when it is tight sometimes. Is used to make a jingling noise or a rattling motion on top of the collar to indicate it is screwed up far enough. Some people use the hammer and 197 some don't. In pipe laying where I had power enough to do it, if I wanted the line under high pressure I attempted to screw in all the threads out of sight. The machine at Deep River for pipe screwing was about ten horse power, may be ten or twelve. Saw five or six different kinds of couplings at Deep River; different in the finish of the ends and the recess. Don't know whether the thread of all of the pipe at Deep River was screwed in so as to entirely disappear into the thread on the collar. The first entry I made in this memorandum book was October 1st and 2d, 1890. I made that at the station where the gauge was on. I think I wrote that page in the order in which it appears. I wrote it in the order in which the book occurs at the time when things occurred.

Q. Tell the jury how you could write that on the first and second of October when you were setting them down in the book when it was done? How could it happen that you should do things and record them at the very time of doing them on two different days? A. This here was written down to that point first and the next entry was made next morning.

Q. Then, sir, you went back and put the second and didn't write it in the order in which it occurs? A. Doesn't it read October first and second—I don't think that date—

Q. That you stuck in afterwards, didn't you? A. Part. I think two is possibly in there—because it is two days, it goes over night.

198 Q. You didn't set it down at the time? A. The gauge I did.

Q. Isn't it true that the top part of that entry is written with

a different pencil and with a different stroke from the entries in the book that show pressure? In other words, are not the first and second and third lines of the top of the entry written with a different pencil and a different stroke than your entry of pressure? A. I think the date is written at a different time with a different pencil.

Q. Why did you go back and put the date there? Was it for the purpose of this lawsuit or the other one? A. Judge Grosscup asked me to separate those statements on the first trial, and I went through my book and done it.

Q. Then you didn't put the date down at the time you did the work in the field at all; at the time you made your observation at the pumping station, did you? A. That number and those dates were put in there when I was asked to prepare this for the suit. Walter Scott, the engineer, took the readings of the gauge every hour. I didn't take them. These were some I took casually for my own observation, and I happened to have this memorandum book here. I knew that a perfect record was being kept by the engineer. This is my own observation. I took them for my own special benefit. I put the date there for the purpose of the other trial.

Q. And put the directions too, didn't you? Put the N. and the S; wrote them the same time you wrote the date down, didn't you? A. Down to that point?

Q. Wrote the N. and S., didn't you? A. The date we always—

The COURT: Just answer the question.

A. That was wrote at the gauge there.

Q. Wasn't N. and S. written after the lawsuit was started? A. It was taken from the engineer's report.

Q. Wasn't it written after the lawsuit was on? A. At the time of the first trial. I commenced to mark leaks on high pressure the 5th or 6th of November. This is marked in the book November 1st, November 7th. This was put down when I was getting ready for the lawsuit in the spring of 1894. In distinguishing between the old leaks and the new leaks anything that wasn't calked, and did not have white lead on it, I counted as a new leak. In connection with the cross-examination of this witness the defendant offered and read in evidence pencil entries in the memorandum book of the witness, referred to by him, which are as follows:

*Testimony of Martin Henry Mosier.*

157

East Lines.		Test #4.	
Oct. 1 & 2.		T	
N.		S.	
4 P. M.	54	4 P. M.	53
5 " "	50	5 " "	48½
5:30 P. M.	48	5:30 P. M.	47
7 A. M.	20	7 A. M.	15
200			
Oct. 2.		Test #5.	
N.		S.	
1:25 P.	61	125	60
225	57	225	56
325	51	325	49
425	47	425	45
525	43	525	42
6 A. M.	16	6 A. M.	15
		Test #6.	
8 A. M.	61	8 A. M.	63
9	57	9	56
10.20	53	10.20	52
11.20	50	11.20	48
1.10	59	110	58
210	56	210	54
730	22	730	13

I can tell the number of leaks up to a certain point developed in the first test. I claim that the shop end disclosed more leaks than the field end in certain sections of the line, on the north line east up to stake 64. (Witness produced sheet from letter book.) This is a record about that, the first report I made to the office after pressure was first on. I never finished it because Mr. Smith came down himself from Chicago. The letter was correct so far as I knew at that time.

Q. Was it true that all the bad leaks were on the field end; 201 was that true at that time? A. No, it wasn't true.

Q. Why did you write it down then? A. It was as far as I had gone.

Q. This was September 18th? A. Yes, sir.

Q. You had been taking tests for quite a while? A. Since noon the day before, yes, sir.

Q. Was it true at that time that all the bad leaks were on the field then? A. I hadn't been out on the line any further than that.

Q. Was it true, so far as you investigated it, that all the bad leaks were on the field then? A. At that time up to that point, yes.

Q. What distance had you been out on the line? A. To stake 64, as far as I remember being out.

Q. How far is that? A. 6,400 feet.

The pipe was laid for between twelve and thirteen miles in the Deep river division. How much beyond that the division extended I never learned. The line runs from north-west and south-east in general direction. The pipe and couplings that I saw after they were unscrewed, which are involved in this controversy, are this piece of pipe here (indicating) and a number of couplings here of the same character. The small leaks were the ones we ascertained by soap suds. The field end is the one that the men put together, and the mill end is the end that the collar is screwed on when it comes from the mill. The bad leaks on the field end referred to were leaks that I could hear by walking along. With the large leaks the 202 ground or leaves or whatever might be there would be rustling in the direction the air was blowing. The unfinished letter of

September 18th was the first report I made in relation to these leaks. I dictated a number of reports afterwards. One October 16th. I commenced to make entries in this tally-book on October 1st and 2d, in regard to leakage. I have nothing written down between September 18th and October 16th. In the first I wrote down in this book there is nothing to indicate the comparative amount of leaks between the field and the mill ends. There is nothing in the book to indicate that difference. In my report of September 18th, seventy-nine leaks on the mill end and thirty-three on the field end. Some of the seventy-nine on the mill end were bad leaks. My explanation why I wrote that all bad leaks were on the field end when there were some just as bad on the mill end is that Mr. Smith asked me to make a report on the condition of the joints. Some time in October I wrote that a little more work with calkers would make the line absolutely tight. We did a little more work with calkers and got the line tight for that pressure, not tight absolutely, but good for that pressure which was sixty pounds. Pipe from the different mills was indiscriminately put in line as it happened to be brought out. Some makes of pipe leaked worse than others. There was no substantial difference between the leakage of gas from the couplings which had been interchanged as between the different mills and where the pipe was all of one manufacture. Three different makes of pipe were tested at Deep river; Morris 203 Tasker, Pittsburg Tube and Paige Company, and at Greentown in the thousand feet that I saw, I saw some Reading pipe.

The pipe was covered during the test made at Deep river, ex-

cept as for such room as we needed for caulking. This was after the preliminary tests. They began putting the pipe in the ditch the latter part of September. Some was put in on the 18th. Joints were never covered up. The portion of pipe in the ditch on September 18th, tested by me at that time, was about half way, about to stake 64.

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*Re-direct.*

Approximately the leaks in the pipe laid in the ditch and that on the ground were the same. I could see no difference in the leakage in that which was on the ground and that which was in the ditch. Ordinary gas pressure in gas pipes for domestic consumption in the cities is about one-tenth to one-thirteenth of a pound. Most of the pipe in the north line east to stake 64 was from Morris Tasker & Company. No danger in screwing pipe up so that all the thread on the pipe is screwed into the collar. There were only three kinds of collars screwed up in the pipe at Deep river. There were five or six different kinds delivered on the right of way in that vicinity.

Plaintiff offers letter dated July 14, 1890, from Mr. Foreman, secretary of the defendant, to Spang, Chalfant & Co.

" We have deferred answering your corrections on our form of  
" contract until we could hear from the other mills. We are in  
" receipt of remainder of the copies of the contract that we sent  
" out to-day, everybody having signed, and are willing to take  
" their chances on fulfilling the requirements stipulated in  
204 " same. Now, if you make, and we know you do, just as  
" good pipe as any of the rest of them, we think, under the  
" circumstances, with the information we give you, that you can  
" see your way clear to agree to the stipulations, same as the  
" other manufacturers. The contract in question is the one used  
" by the Standard Oil Company. Before submitting it to any of  
" the manufacturers whatsoever, the writer took particular pains  
" to ask Mr. Converse of the National Tube if any of the require-  
" ments were unfair to the manufacturers, to which he replied that  
" in his opinion they were not, that their company had produced  
" hundreds of miles of pipe for the Standard under these contracts  
" without any trouble whatsoever, and backed up his assertion by  
" signing same and taking sixty-five (65) miles of the line.

" If we had it in our power to word the contract so as to  
" suit you we should gladly do so, but we, as you are aware, are  
" only brokers, and our principals insist that these requirements  
" be carried out. They have the very best and most experienced  
" line-pipe men engaged to connect the line-up, and their expe-  
" rience heretofore has always been, so they say at least, that

of  
Henry  
“leaky joints happen on the manufacturer's end of the pipe rather  
“than on the line-pipe men's work.

“You must rest assured of one thing, that our principals are  
“not very exacting, and anything like good fair work will be ac-  
“cepted by them without any complaining.

“On receipt of this letter we wish you would start at once on  
“the work. The writer leaves for New York this afternoon and

205 “will see Mr. Chalfant either at the pipe meeting or the day  
“following in Pittsburg, should he be unable to attend, at

“which time we feel sure that the exceptions you take can be  
“rectified.

“In the face of this letter should you still have any hesitancy  
“to start on the work, kindly wire me on receipt of same, care of  
“the Murray Hill Hotel, New York, and I will wire you further in-  
“structions on the matter.”

of  
Quinn.  
WILLIAM QUINN, witness called for plaintiff, testified in substance  
as follows:

I am foreman of a department of the National Tube Works Company; live at McKeesport, Pennsylvania. Am familiar with the manufacture of pipe for natural gas. Have worked in mills where that pipe was made of Morris Tasker & Company, then at Philadelphia; Allison Manufacturing Company in Philadelphia, Spang, Chalfant and Company in Etna, about six miles from Pittsburg, National Tube Works, about fifteen miles from Pittsburg, at McKeesport. Am fifty-four years of age. Have been in that business since I was a boy, with the exception of the few years of the war. Have been engaged, I think, at one time or another in every part of the work of making pipe. Am also familiar with the method of making couplings, with the tests, and also with the tests at mills with eight-inch standard line pipe. At the mills the pipe is tested by hydraulic pressure, one joint of pipe at a time with the weld upwards. The man testing takes a small hammer and taps the pipe as he goes along, walking from one end to the other; looks at it carefully; examines the coupling all around and if he finds no leak puts his stencil mark on it. Time occupied in testing a  
206 joint of pipe is half a minute or a few seconds less. The purpose of this test is to ascertain tensile strength of the iron; second, to see if weld is tight, and at the finish to see that the joint in which the coupling enters is tight. One joint of pipe, averaging twenty feet in length, with the collar on one end of it is tested. Have seen many lines of eight-inch standard pipe for the



conveyance of natural gas tested in the field. Am familiar with the method of laying pipe in line for natural gas; have seen it at various places and been present at tests of it as a representative of the National Tube Works Company. Never knew gas pipe in line to be tested with hydraulic pressure. Such test would not develop the fact whether line was sufficiently tight to hold natural gas. In testing pipe in line for conveyance of natural gas to determine its tightness, reliance is not placed upon the mill test. Saw a pressure on the Murrys ville gas line into McKeesport from seven to eight hundred pounds, about 1885 or 1886. For about four miles from the wells it is laid with ordinary standard line, screwed joint couplings, in center with standard pipe with the Converse coupling, which is a lead joint; after coming into McKeesport again with standard eight-inch line screwed coupling. It was a very tight line at seven or eight hundred pounds. Pipe is threaded at the mills by dies into which it is entered and which are stationary, the pipe being revolved by machinery. Threads are cut to a given point at which they have a gauge set in the machine at which it stops. Die is opened and the pipe taken out. The other end goes through the same process. Dull thread makes

a bad thread; not necessarily a leak, but a doubtful 207 thread. After a coupling is welded it is threaded by means of

a tap screwed right through it cutting the threads, then a taper tap is put in and cuts away so much of the thread again as to make a taper towards the center, first on one side then on the other side of the coupling. Same process in all the mills in which I have worked, except in Spang-Chalfant's, where, instead of having a solid tap they have a sectional tap fastened on a mandril, which, after going through to a certain distance, strikes an obstruction, purposely placed there, and falls apart. All collars in the different mills are supposed to be built on a uniform system and to be interchangeable. Have frequently seen in the field collars of one mill put on pipe of another. If they are properly made they are interchangeable. If the tools for threading pipe and collars become dull or worn they will cause dull threads, which will not make as perfect a joint as a sharply cut thread. The effect would be the grinding of the thread on the pipe if sharply cut if the collar had been threaded with a dull tap. The taper on the pipe and the collar should conform in order to make good joints; otherwise the joint would not stand as great a pressure as if perfect. In my opinion there should be a taper on standard eight-inch pipe for the conveyance of natural gas of two and one-eighth inches in length. If gas gets in between the threading of the pipe and the collar under high pressure, of say five or six hundred pounds, if the collar was not sufficiently strong to resist that expansion it would naturally force the collar up so as to cause a leak.



208 In the latter part of April or first of May I witnessed the test of pipe in line near Greentown which was laid by an employe of the Columbus Construction Company by the name of Coyle. Half of it was National Tube Works pipe, and the other half made up equally of Spang, Chalfant & Company's and Reading Company's pipe; 602 pounds was applied to that pipe. Test was made of two sections. We discovered three or four leaks, one of which was rather large, put lead into the collar, this Hequembourg collar, pulled it together with clamps and made it tight. The other two were small, and we calked it a little. Saw this pipe strung along with the old collars on it. We took those collars off, substituting for them, after cleaning, the heavy collars. We screwed three joints of the pipe, the end of that was lowered into the ditch; we laid it in the ordinary form. (Witness here detailed the method of screwing pipe, as already given in the testimony of other witnesses by means of tongs.) In laying line pipe for gas in the field I use oil as a lubricant, and think there is no better lubricant. It is used generally in the mills. Same kind of oil but not as good as that which I have seen used on the line. About 1,020 feet of this line had been laid when the pressure was put on. The ends of the line were plugged in the usual method and gas admitted. It was procured from the wells in the immediate neighborhood of the pump in the evening. In the morning at half past six the gauge registered 552 pounds. As the sun came down the gauge showed a little increase until about eleven or twelve o'clock it was closely approaching the 600 mark again. Saw the gauge again 209 just before it was taken off; it was just close to 600. There was a change of temperature between the day and night of some thirty-five or forty degrees; the temperature being that much higher in the heat of the day. We stopped the leaks by means of this appliance, which Mr. Hequembourg invented, and then again put the gas on. Recess in the collar is filled full of lead in order to do this. It protrudes a quarter or three-eighths of an inch, and is then driven right in tight to fill up any hole or small place where a leak can come out. It is really a double joint, a threaded and a leaded joint reinforces it. In stripping the old collars off we discovered two pipes split on the ends, under the mill end of the collar, one extending an inch or an inch and a quarter, the other about three-quarters of an inch. Leaks in the field are detected by sight, hearing and water test; also the fire test. Have never seen the soap and water test used in the field; only in town where there is low pressure. The water test consists of throwing water around the joint; wherever a leakage would be it would throw it out. Fire test consists in passing an open lamp around the collar in the ditch. Morris Taskers' collar cannot be successfully calked with lead. If

you have perfect union of iron between pipe and collar, expansion T  
will not take place if the pressure of gas on the inside of the pipe  
does not exceed the structural strength of the pipe. In my opinion  
a line of eight-inch standard pipe for the conveyance of natural gas  
at a working pressure of 300 pounds to the square inch should, in my  
opinion, as a factor of safety, and to secure a tight and perma-  
210 nent line, be tested to double the amount of the usual carrying  
capacity of the line. For 300 pounds it should be tested at 600  
pounds. I was working at the National Tube Works in 1890, ex-  
cept part of May, June and July, and part of August, when I was  
away in the Indiana gas field, and was acquainted with the manu-  
facture of eight-inch standard line pipe during the months of 1890,  
when I was there. I was acquainted with the mile of eight-inch  
line pipe furnished by the National Tube Works Company on the  
line where the Columbus Construction Company was laying its  
pipe, which was afterwards put in the ground at or near Ainsworth  
in 1891. Saw a car-load of it shipped and saw them putting part  
in another car previous to my departure for Ainsworth. The men  
who laid that section of pipe were employed by the National Tube  
Works Company, who hired them at Pittsburg. They were turned  
over to another man previous to my coming out there, by the name  
of Thomas Galvin.

"Q. What did you have to do with that, Mr. Quinn?

"(Objection by defendant, which was overruled.)

"A. I watched the laying of it, as I was to conduct the test  
"that was to be conducted on so much of that pipe as entered  
"into that line.

"Q. You may describe how it was laid."

(This question defendant, by its counsel, then and there  
objected to, which objection was sustained by the court  
without prejudice to the right of the plaintiff thereafter to  
renew its offer of evidence on this point, to which ruling  
of the court the plaintiff, by its counsel, then and there  
duly excepted.)

Have worked for the National Tube Works Company since  
1869, except seven years I worked for Spang Chalfant & Com-  
pany. Am now foreman in the rolling mill department. The Na-  
tional Company is a competitor of the defendant company. Have  
been in Chicago a week. Plaintiff guarantees my expenses. I ex-  
pect to get little if anything more from them; will be paid for my  
time by my company. National Company has no interest in this  
lawsuit. That company furnished some pipe used in the construc-

tion of this line after the Crane contract was canceled; can't say how much. It had been the custom of the National for fifteen or twenty years where they furnished pipe to be laid in a gas line to send a representative to see it tested. I have been such representative in a large number of cases. Pipe, however well made, may be spoiled in the laying. I presume the man who is constructing the gas line wants to know whether his pipe has been well laid as well as to know whether it has been well made. He don't know anything about the previous mill tests; he simply wants to see the test made himself. I know there are a very few purchasers who have a representative present at mill tests. The pipe is marked as being tested. In my experience a gas line is never accepted until it has first been tested in the field, no matter how much it may have been previously tested in the mill.

That is about the size of it. Very rarely sufficient pressure is applied in the field to burst the pipe. Mill test covers test of structural strength completely. Sufficiency of the joint may be tested by gas or air in the field because gas will escape where water 212 will not. In saying pipe should be tested to double working pressure I have reference to the question of the sufficiency of the joint. This is a matter of custom. I have a reason in my mind for it which I can't very clearly express. There are times when gas pressure fluctuates, going not necessarily any higher, but lower. It will cause a difference of the relative merits of joint, for instance, if I may be allowed to explain, a boiler which is in service six days in the week and on the seventh day is allowed to cool off it is customary for boiler inspectors to inspect the boiler up a great deal over the capacity which the boiler carries. We adopt that as a custom and rule in testing pipe. That is my explanation. That fluctuation is somewhat in the nature of the fluctuation of steam in boilers. We know from experience in lots of cases where a leak will not develop under 100 pounds, 150 or 200 will begin to develop it. There is an increase at 400, a greater increase at 500, and at 600 it will be very great. If you never expect to use the pipe at more than 300 pounds pressure the use of providing against leaks at 600 is simply as a factor of safety against contingencies. Simply the fact that leaks will develop, a higher pressure will tend to make you have greater care in closing those leaks under smaller pressure, so that they will be absolutely tight at 300 pounds pressure if the leaks develop at 350. The Murraysville line that I testified about carried a pressure of 700 pounds and over only two or three months. The pressure was falling almost daily owing to an enormous waste, then fell to say 600 pounds, and was still falling all the time, due to an enormous consumption in

213 the field. Found only small and inconsequential leaks on that line except one or two large ones, which we calked. Line is still in operation, but does not carry over two pounds pressure now. Very little leakage on that line. I know of pressure being as high as 750 pounds. The National standard collar at that time weighed about twenty-five pounds. After line was first laid it was tested with the full pressure of the well. When well pressure was turned in line was in the ditch, centers covered, joints exposed. Line was laid in the usual way of laying eight-inch line pipe, as I have already described. Could hear some leaks on line laid with Hequembourg collars eight or ten rods. Walked over Murraysville line and examined every joint carefully for the first three miles and a little over. Pipe, after it has been screwed together, will spring out of line in a hot day. Have never seen it raise, but have seen it spring sideways. Don't think it does the joint any harm, but don't do it any good; would have but very little effect, if any; whatever there was would be injurious. (The witness refers to various tests of gas lines, some of the pipe like that in controversy, and some heavier and some lighter, tested at various pressures from 300 to 500 pounds with the result that they all showed more or less leakage.) We let some smaller leaks alone; that was usual in Pennsylvania if they got a line somewhere near tight. There is in Pennsylvania gas a gummy substance which permeates through it and hardens something like gum, and we found it very effective in stopping leaks. What was a leak to-day would be closed up to-morrow or the next day. Some gas escaped in the air in 214 the Pennsylvania lines while they were in operation, not very much in the field. Have seen vents or places where the escaping gas would burn in the towns. Ordinary leaks will close themselves up. But that is not the way lines have been laid in Pennsylvania for the last eight years. The National Tube Works Company pursued a different policy in reference to the Murraysville line. If there were any small leaks they considered it advisable to let it waste rather than to attempt to disturb the collar for calking, and they let them go in that line. The leaks which they did not close up were so small that not more than two or three thousand feet, my estimate, would waste within twenty-four hours. It is true that from 1890 onwards much more attention was paid in the Pennsylvania fields to making absolutely tight joints than before. The mill end of the coupling is frequently moved from its original position when screwing up pipe in the field. Have known it to go as much as two threads. In threading pipe the mills all use an automatic concern which allows the pipe to come outside the dies as much as the desired length of thread. The dies and taps are renewed frequently, and it is especially looked after to keep them

sharp. In a first-class mill they pay the most particular attention to that subject. As soon as there are any evidences of a die or tap getting dull they would be taken away and a new one substituted and the old one sharpened up, so there would not be any way except by the grossest carelessness of having pipe or collar cut with a dull tap or die. The result of the grinding up of the dies is some slight alteration in the taper.

215 The mill end and the field end of the collar are cut practically in the same operation; that is, one collar at a time, and not a great number of collars tapped on one side and then turned and tapped on the other, so the mill end and field end would be alike. It is altogether a question of care in applying the machinery. It is hardly possible for the same tap to give a collar a taper of five-eighths of an inch to the foot, and another a taper of three-quarters of an inch to the foot. There are different methods of tapering pipe and collars in different mills, but it is all done by means of dies and taps in some form. There would be no rigidity where a taper pipe was screwed into a straight coupling so as to get a bearing on part of the length of thread. Line pipe couplings are all tapered. If there was perfect union between the pipe and the collar at the joint, that part of the pipe would be more rigid on account of the extra weight than any other, and expansion would not hurt the line until it got to the point of bursting. Expansion of pipe is inversely as its thickness, and is not harmful to the tightness of the line unless there are interstices under the thread. If a collar with bad thread underneath it expands it will leak. This is true of a collar whether it weighs 22 pounds or 45 pounds if the pressure is sufficient to expand the heavier collar and the gas gets into the thread. It is true, that if you get one inch of complete and perfect contact of iron with iron on the collar and in the pipe, you are protected against leakage through expansion in the way suggested, but there would not be the rigidity about it which is

216 necessary to hold the line tight. It is true, that one thread of perfect contact all the way around would protect you against leakage if it be maintained. With a little thread it can't be maintained at all. The lubricant applied to this line of Crane pipe and Hequembourg collars was No. 1 lard oil. We did not use extraordinary pains to make a tight line out of this pipe, simply the ordinary way of laying it, the line was cleaned with great care, threads were brushed bright with wire brushes, so that that there would not be a speck of rust on pipe or collars; cleaned the threads thoroughly, they were packed in saw-dust, and brushed that out both ends. Cleaned pipe and collars to a pitch of absolute cleanliness; used a little waste to wipe out before the pipe went into line; inspected the pipe carefully before putting it in line. Before

the old collars had been taken off it had been determined to reject them and substitute the new ones. Three kinds of pipe were laid in succession; first, National, then Spang-Chalfant, if I remember, then the Reading. Pipes from each mill were laid solid without intermixture between different makers. The pipe was laid so that it could be made part of the main line when it was built. In taking off the old collars I saw no signs of cross-threading so far as the threads of the pipe were concerned, or imperfect threading, except in the two that I have spoken of, that were thrown out. There were 102 lengths of pipe tested of about twenty feet each. I was sent from the National Tube Works to conduct this experiment with 102 couplings. That was my first experiment with those Hequem-bourg couplings in the field. I think Hequem-bourg adopted the principle of the dovetail recess; I have seen it on a smaller 217 scale before; it practically makes a double joint. If there was any way of holding the pipe together without screwing it up, that lead joint would be a complete joint of itself. I think it is a reinforced joint. Would not put it on a line unless specified. It is not embraced within the description of standard line pipe with standard line couplings. That dovetail recess is something independent and entirely outside of standard pipe altogether.

Test  
W

#### *Re-direct Examination.*

At the time the Greentown test was made, the plaintiff and the National Company were negotiating for the collars and some pipe. This was immediately after the making of the first Hequem-bourg collars by the National Company. In my opinion one inch of perfect thread contact between pipe and collar would not be as good at any pressure as two and one-eighth inches. If you had but one thread of perfect thread contact between pipe and collar, the effect of any lateral strain upon the pipe at that point would be to weaken it. If threads on the taper tap put in a collar should become dull at one end of the taper, that would to a certain extent have an effect on the uniformity of the taper in the collar, and this would certainly alter the degree of taper. In order to calk you must calk all around the collar, and doing that in many cases injures the opposite joint. Calking on the field end might injure the mill end, or *vice versa*; the necessary jarring and thumping and hammering necessary to bring that into contact. Some purchasers have an inspector at the pipe mills, but the majority don't.

218 Since 1891 more attention has been paid to the tightness of lines, because gas was so plentiful previous to that year a little waste more or less was not counted. As pressure decreased and loss was felt, more attention was paid to getting all there was in it.

In my opinion natural gas could be safely transported in 1890 and 1891 in an eight-inch standard line pipe properly laid, at a pressure of five to six hundred pounds. It is hardly possible the split I noticed in the two pipes at Greentown could have occurred after leaving the mill.

219 L. A. STANFORD, a witness called on behalf of the plaintiff, testified as follows:

Live at Minster, Ohio. Am contracting; working for the Ohio and Indiana Oil Company. Have had considerable experience in laying and screwing pipe for conveying oil and natural gas, including eight-inch standard line pipe. Was employed by the Columbus Construction Company in 1890 as superintendent in laying their line. Commenced work about the middle of July. First service in connection with laying the pipe was at Tolleston Marsh. I witnessed the unloading of some of the pipe for that part of the line at Tolleston. (Witness here states that the pipe was unloaded by means of skids and ropes, as already described by other witnesses, and describes the manner of loading on to wagons, then proceeds to tell how the pipe was laid at Tolleston Marsh by means of tongs, describing the same process as that stated by other witnesses, particularly Jackson Raymond, stating, however, that they used standard black in that process at Tolleston Marsh for a lubricant, and that the ditch had then been dug, and it was let down by means of skids as it was laid.) The pipe was unloaded at Liverpool the same as at Tolleston. (Witness states also that he saw pipe laid at Deep River by the same process as used in the swamp, except that it was laid on the ground, the ditch not being dug; describes manner of lowering the pipe into the ditch at Deep River, as already described.) I saw bends made in the pipe in the Deep River section. For this purpose it was heated with a wood fire, which is the common process with eight-inch pipe. A slight bend may be made without heating. Think there is no lubricant that will make a tight joint if threading is imperfect. Attempting to screw up a  
220 pipe that is entered cross-threaded spoils the threading. When cross-threading is detected, the joint is backed out, if the thread is not spoiled it is cleared off, oiled and started again; if materially damaged it is laid to one side. It is not practical to lay pipe in the bottom of the ditch. Saw them screwing pipe in the Kankakee section, close to the Kankakee river. That was done by the same process as at Tolleston, Marsh and at Deep River. There the trench had been dug before the pipe



was laid. The pipe for Kankakee was taken off at Walters and Clanricarde. (Witness then describes the laying of the pipe at Deep River, by machine, as has been given by the testimony of other witnesses; states that this machine was a device of his own; states that Daly, who was the foreman on the Deep River section of a gang of pipe men, had worked for him at Louisville, and was competent for that position, and also that Mr. Sheehan, who had charge of another gang at Tolleston Marsh, was a competent man whom he had known before). They laid the pipe from the Kankakee river west. At Deep River, one gang began to work east, and one west from the pumping station. Was over the Deep River line when air pressure was put on it. Remember the occasion when two gentlemen came down with Mr. Hequembourg, who were present at the making of the test. Did not at the time know who they were. Pressure about seventy pounds. Went over the west end of the line including pipe laid by hand and by machine as well. The line leaked badly. Some leaks were large, and some small. A great many of them were small leaks. You could hear large leaks two or three joints before you would get to them. Joints where there was that kind of a leak you could smell gas pretty plain. Sometimes you could see it blow the dust away.

Q. What other evidence did you discover besides hearing it, and seeing the dust blow away? A. A small leak where it wouldn't make much noise you could smell gas. The gas smells pretty strong. I didn't stay until they put soap and water on. I

think that was perhaps the last day I was out there. They  
221 calked the line by the usual process of iron calking. When the machine is attached to the collar of the pipe if the mill joint is loose, it will naturally tighten that joint if that is not as tight as the pipe is in the collar back of it. Remember something about getting up some instructions in writing to the men in charge of the business of unloading the pipe. Have seen some crooked pipe on the line. I think it was Morris and Tasker's. I remained on the line until the last of October or in November, then returned home.

#### *Cross-Examination.*

Some of the pipe was rolled off from the cars without ropes. When the pipe was about as high as the car they would lay skids up and roll it over onto the pile. In starting the piles on the ground they used ropes to let them off. I couldn't tell how many piles I ever saw started. Don't know who had immediate charge of unloading the pipe at Ainsworth. Knew Button, but don't know whether he had charge of it.

Q. You have told the jury that you detected a little leak



that day that Kilgore was there by smelling it. Don't you know there was no gas in the pipe at all? A. Yes, sir.

Q. There was nothing to smell? A. Well, I found that I thought of a gas line where I had been testing. I didn't, of course, smell any air, but I saw large leaks, but didn't smell gas.

Q. Didn't you state twice on your direct examination that you smelled that gas? A. I might have had in mind a line that we were testing with gas.

Q. You didn't have the right line in your mind, did you? A. I didn't intend to tell you wrong, no; I may have made that slip.

Think the regular standard collar would weigh about thirty 222 pounds, but don't know. I got most of my orders from Mr.

Smith while with the Columbus Company. He and Hequem-bourg were above me. In laying oil pipes I have pursued about the same process as in laying pipe for gas. I know of no difference. The first work I ever did with my machine was on the line at Louisville. Have been some eight or nine made since on my pattern. I own the only patent there is on a machine for laying eight or six inch pipe that I know of. I have seen the collar turn at the mill end when the pipe was screwed with a machine, and have seen the collar turned at the mill end by tongs sometimes; possibly have seen it happen half a dozen times a day. Would not be surprised to see it happen two or three times if I watched pipe screwing for an hour. Think sometimes in the mills they don't screw the collar on over the thread, that one or two threads are left that are not turned up. In those instances where the mill ends were turned in the field, I think the collar had not been screwed over all the thread on the pipe. Paid no attention to that exposed thread on the mill end in the operation of my machine. Have seen two or three threads out where collar wouldn't turn. I never took mill end off after it had turned around a few times in my machine to see how the turning of it, dry, without oil and dirty, did affect it. Could not tell by walking along the line after the pipe had been screwed together how it had been screwed up, or whether the threads had been injured, or whether there was a poor threaded collar. In my experience, if the first thread of the pipe had been broken down the men would usually try to remedy it, either with a chisel or file to start it. Perhaps they would undertake to screw it in if the first two threads were broken and jammed in different places. Would not reject pipe if the last thread was very slight or hadn't much depth. Many of them had slight threads where the threads stopped. In laying pipe it was my custom to turn it on until the pipe got tight enough. I could tell this by the efforts of the men or the machine. If a machine,

by the exhaust of the engine. Cannot remember how many

223 days I worked at directing the men when to stop screwing in laying pipe. In finishing the screwing with tongs we always had four pair of tongs and four men on each pair. May have been short a man or two sometimes. It is an easy matter for a man who has any judgment to tell when he is getting the joint up by looking at the men and the way the pipe moves. If it moves a half an inch it is pretty tight. If we can turn it clear around, a half stroke, it is not so tight. If they roll it up pretty fast it gets a little warm so you can feel it. Have never seen the man who directed the screwing keep one hand on the collar as it was being turned. Used the hammer to tap the collar. The men can't keep stroke without the hammer. As the men come down the man hits on the collar; keeps time with the hammer if he wants to hurry them up a little and if a joint sticks a little sometimes they tap it thinking the jar will start it. Know that some joints go up easier than others; don't know why. Think the collars have some expansion. May possibly press them out some, but not very much. I screwed up the crooked pipe I found; I suppose it went into the line. It was not cooked enough to do any hurt except to make it turn hard. Don't think it would interfere with the joint any more than it takes longer to put it in. When I was at work down there I lived in Chicago, came there nearly every night, but stayed some nights at Ainsworth. Smith was immediately over me and he lived in Chicago. I could not say that I noticed any difference between the different makes of pipe at Deep River as to the per centage of leakage. I kept no memorandum at that time. I thought the first mile of pipe running east from the pumping station had the leaks about equally divided between the mill end and the field end. Perhaps the biggest leaks were on the field end but I do not know how to account for this. I have frequently seen instances where the pipe was backed out and it had been cross-threaded in my experience. Couldn't tell you how often. It might be the collar 225 wasn't straight on the joint; that sometimes occurs; if it is not, if the pipe is straight with the line, it is cross-threaded. If the men couldn't screw the joint in and the thread was all out we would know there was something the matter with it. If it screwed up good until it came within two or three threads we wouldn't think it was cross-threaded. You can't screw it in half an inch if it is cross-threaded. My machine is about ten horse power. Could tell when pipe was screwed up by machine by the labor of the engine.

*Re-direct Examination.*

It is not necessary in order to make a perfect joint, if there is uniformity between the threading on the pipe and the collar, to leave two or three threads uncovered by the threading of the collar. There were some bad leaks on the field end of the pipe, the joints that we made, when I went over the line. I couldn't tell in proportion how many there were. Where there was a leak on the field end it was worse than on the mill end, but there were about as many leaks on the mill end, perhaps not as big as some on the field end.

HENRY COYLE, a witness called on behalf of the plaintiff, testified as follows:

Live at Greentown in Indiana. Am working for the Indiana Natural Gas & Oil Company. In 1890 and 1891 worked for the Columbus Construction Company, more particularly in the fields drilling wells and piping gas to farmers—work of that kind. Have been engaged in that business since the age of sixteen or seventeen years; drilled wells, run down eight-inch pipe; inside of that put five and five-eighths casing, after the well was finished we tubed it with two or three-inch clear to the bottom; helped lay some pipes out there in the field also. Knew of a short line of about 1000 feet being laid in Greentown in the spring of 1891. Eight-inch pipe; I loaded this pipe on the wagons at Vermont station and brought it back; one end was lifted on the wagon then the other, chain put around with a binder pole put in to tighten 225 the chain. I saw the pipe unloaded at Greentown; one end was laid down on the ground, then the other. Spang, Chalfant and Reading pipe were put in there. Saw some pipe on the cars at Vermont. There was nothing between the pipe as it lay on the cars. It was usually loaded on what they call gondola cars. I saw a load or two come in box cars. I laid the 1,000 feet of line. (Witness describes the process of cleaning the threads, laying the pipe and screwing it up, as already given by other witnesses, except that he says as to this pipe they used kerosene oil to clean it, and also a little stick that they made to fit the threads by taking a piece of wood about half an inch thick and sharpening it a little so as to be about an eighth of an inch thick at the point; set it on the threads after the protector was off and pounded it until it would take the shape of the threads. And also testified that when this pipe was laid they put it into the ditch as they screwed

it up. Says he never saw any pipe laid in a ditch and screwed up while in the ditch excepting in crossing under railroad crossings, etc. Sometimes that was done just for a joint or so.) The line referred to was laid in April, 1891, and almost immediately a pressure of about 300 pounds of gas from the wells was put on. It leaked some. The leakage was I think about eight to ten pounds an hour, if I remember right; perhaps ten to twelve. Tests were made repeatedly; there was always a loss but I don't remember what it was. I don't remember of doing anything to remedy the leaks or defects except trying to put a clamp on the edge of the collar. Didn't stop it. I saw a great deal of the pipe subsequently on the line and the thread protectors. Each make of pipe seemed to have a thread protector of their own. Some were wider than others; one make of pipe that had a piece of paper wrapped around and a little iron band put around and riveted together just the right size to slip over the pipe. I had charge of the men in relaying the pipe in Tolleston marsh in 1891. Most of it was done in the month 226 of November. There was one line through the Tolleston marsh tested with air from Deep River before it was taken out. The line was submerged under the water; the south line was across the Calumet marsh, and at these tests leaked considerable; were 112 large leaks and 144 small ones at a test on October 29th, 1891. We had to take up the line and relay it again and take off the collars that were on. Had first to uncover them and take it up on to the bridge, take off the collar that was on, put another one back on, then lower it back again and screw it together. We made the change on the bridge. In changing the collars sometimes we would find a thread that would be stripped, or a defective place in the pipe. The bridge was built under the engineer's department. The water across the marsh varied in some places from seven to eight feet deep; usually from two and a half to three feet deep. The marsh there that was bridged across was more than a mile. The bridge was built of wood by the Columbus Construction Company. I was present at the tests all along the line in the Deep River division after the heavy couplings were put on. Deep River Division ran south-east about four miles and north-west clear up to the Indiana boulevard; that is about five miles from the state line. Know Quinn, witness here; saw him at Greentown when we made our first sample coupling with the heavy collar. First laid fifty joints with heavy collars. I did the work. It was done in the same manner as the preceding line with the old Crane collars on it. Tested it afterwards with 600 pounds pressure. It was absolutely tight. It is in the line to-day. Experimented there with other pipe with flange unions. We were able to make it absolutely tight, except that the leather gaskets between the flanges leaked. Ex-

perimented, also, with reinforced collars and Crane pipe; just took an ordinary collar and put the bands on the outside, with a groove, so that we might put lead in, so as to have a recess, the same as 227 in the Hequembourg collar. These bands project over the end of the collar half an inch. Put 600 pounds pressure on this particular line; I don't think it leaked any; I calked those joints myself. Along about November, 1890, every day Hoskins and I made an inspection of the Crane pipe. Hoskins was in the employ of the Crane Company. I was then working for the Columbus Construction Company. Hoskins and I made a written statement of the result of our inspection. Ellwood Haynes made up the report for us. We went out to the field, came along to a joint of pipe, looked at it; if we found it defective in any way we tallied it and put a little check-mark on it, and put it down in our books. When we came in we would leave the books we used that day and take another book. Haynes would write it up, and when we came in we would review it from our books to see that he had written it up correctly, and then sign it, Hoskins and myself. In these reports the letter J. indicated jammed threads in the pipe; the letters D. T., defective threads; the letter S. signified split pipe; the letters D. C. signified couplings defective aside from thread; the letters D. C. T. signified defective threads in the coupling. Casings in wells have collars and threads, and the weight of the pipe is suspended, and there is nothing at the lower end to hold it up. We put some of this five and five-eighths casing down to a depth of about 520 feet at Greentown; inside of that we put three-inch pipe, which went down to a depth of about 950 feet at Greentown; and as that was being screwed together and lowered down there joint after joint it was suspended from the top at all times. After the pipe was relaid with the large collars we had some sections that didn't leak any, while others did. Wherever we found any leaks we calked them. Sometimes it would show a little loss of pressure, even after being calked. That is the line that is in operation to-day.

This line of 1,000 feet of pipe delivered at Vermont was right at the eastern terminus of the line. It was tested in the ditch without being covered. Vermont is about four miles from where the test line was. I didn't have anything to do with unloading the cars at Vermont. All the pipe delivered at Vermont on the cars was there when I hauled out this 1,000 feet to make the test. There was quite a good deal of pipe there. This pipe came from two mills, Spang, Chalfant and Reading. Some mills marked full

name and some their initials on the pipe, and in addition marked the length or width of it; always some kind of a letter or brand on the collar stamped in with an iron stencil while the pipe is hot apparently. I don't remember rejecting or throwing out any pipe in getting pipe from Vermont for this 1,000 feet test. It had laid out there in the snow and rain all winter and had rusted up a little. No one but me had anything to do with the screwing of that line together so far as bossing was concerned. At the time of the test I had not seen any of the collars. Either Mr. Smith directed this by letter to me or to Mr. Haynes, and Mr. Haynes directed me verbally. This 1,000 feet was hauled there and put there for the purpose of a test. There was no representative of the mills there, nor anybody representing the Crane Company at the test. I think Jacob S. Smith wrote me, telling me to make it, and I believe he was general manager. I directed, when screwing up a pipe, when to stop; usually by seeing how hard the men were screwing the pipe, and also the number of threads that were out of the end of the collar. If there is much friction in screwing it up, there would be heat in the collar. Sometimes would give the collar a little tap to start a vibration. In some makes of pipe the collar will cover all the threads when it is screwed up; other makes, you can hardly force the threads into the collar, the last thread or two is not 229 as deep as the others. The recess or projections at the top of the collar beyond the thread of the collar is about half an inch usually, though some, the Reading for instance, have no projection at all. Frequently the collar turns at the mill end when the pipe is being screwed together. I wouldn't classify this as an imperfection in the pipe. I never saw the men employ kerosene to clean pipe unless it was rusty. In cleaning the threads they used the wire brush first and then polished it with the piece of wood that had been hammered on the threads so as to fit them. I don't think there would be any rust covered between the collar and the pipe on this 1,000 feet of pipe. It is an old idea that Diamond Black, if applied to the collar, might stop up some of the places that might let gas through, and that is my idea. Common thing to employ two different kinds of lubricant, one for the collar and the other for the pipe. Where it became necessary I used a file in repairing the threads in laying a line of pipe; cannot remember whether I used the file in putting this test line down. I examined the threads and collars that went into this test line. I think it was just average pipe from the pipe we had received. I had condemned portions of the Crane pipe, and don't know but what the very pipe that I put down there was some of it, what had been previously condemned in our inspection. I have laid gas lines of eight-inch gas pipe that were absolutely tight for twenty-four hours. Previous to



1891 I had never tested a line to see whether it was absolutely tight or not. I don't know what became of the collars and pipe that were in this 1,000 feet test. It is more than likely that it was put in the line with the Hequembourg collar. The Hequembourg collar is the first one that I ever saw constituting a thread union and lead union; that and the weight of it are the particular features of that collar. The reinforced collars I have referred to must have originated with the Columbus Construction Company. These

reinforced collars have a recess of about half an inch deep; 230 it took about four pounds of lead to fill this recess. The paper thread protectors had straw paper in them. It was wide enough substantially to cover the threads. The iron band over the paper was an inch and a quarter-or an inch and a half wide. The least jam on the side of the protector might jam the pipe; would not with an iron protector. Except that, while it stayed on, it would protect the threads. I wouldn't be able to say that in my inspection I found more of the threads were jammed that had paper thread protectors than those that hadn't. Prior to making my inspection of this pipe I had never acted as an inspector of pipe either in mills or in the field, except where I was using the pipe myself. Have never served in the capacity of inspector. Prior to 1890 I never had to do with laying any considerable amount of eight-inch pipe, nor any occasion to pass upon the quality of such pipe. Received no instructions prior to starting out on this tour of inspection in writing; they were verbal, I think, and from Mr. Smith. Where we first started out to inspect on the Michigan Central Railroad the pipe was strung there for about one mile and a half, I should think, and then we ran on to the Tolleston marsh. The other side of the marsh it was strung for perhaps a mile, then there was one marsh where it was piled up for half a mile, then to the Hobart mill-dam it was piled up; east of that there was a small portion of pipe that was strung over to where the pipe had been screwed up to before. East of Deep River it was strung for half or three-quarters of a mile. At Farmer's Siding and at Kankakee River there was a little pipe strung on the north side of the river, and some on the south side, and it was piled up in the Kankakee marsh, while it was screwed across the river; then there wasn't any more until we got within about a mile of Bennett's Switch; then it was strung from there to Greentown is my recollection, or a portion of the way. Piled up from two to three pipes up to six or eight pipes high. Don't 231 remember how wide the piles were. At Clark was one pile that had as many as twenty or thirty pipes strung side by side. I think the pipe piled at Bennett's Switch, Vermont and Greentown had pieces of wood between the layers of pipe. Have seen

pipe piled up five or six pipes high along the right of way so as to keep it out of the water. We inspected pipe at Tolleston and Clark, Whiting, East Chicago, a little at Hobart, some at Ainsworth, Bedley, Clanricarde, Farmer's Siding, Winnamac, Bennett's Switch, Greentown and Vermont. The largest amount of pipe at any station was, I think, at Clark. I could not tell when the first page of this report of our inspection was written. We were something like six weeks making the entire inspection. We never sorted out any pipe in this inspection and laid to one side. These reports are the original ones; Mr. Haynes went along to the different places wherever we stayed over night, and they were made there. I would not be able to tell when this first page on "Exhibit X 1" was made. The pipe of the different mills was distributed indiscriminately; we found it that way. There is a certificate on this "Exhibit X 1," reading: "We hereby certify that we have examined the pipe here recorded and found it defective, as shown by check marks." "Henry Coyle, Hoskins, Inspectors." There is sixteen pages preceding this certificate. It is a little difficult for me to tell just what this certificate did apply to. The report was not dated, although the place was mentioned and each kind of pipe was mentioned. There is nothing on these sixteen pages to show where the pipe was. After we had been along no one could tell that we had been there so far as any distribution or change in the location of the pipe. I depended upon my associate to do the writing, and copied from his book each evening; left the copies that I got from his book at the Chicago office. Last saw the books at the office of the Indiana Natural Gas and Oil Company. They were in the possession of Mr. Kennedy. The Columbus Construction Company has the same office. The thread on the pipe where it was bruised some- 232 times looked as though it was done upon the cars, as though one thread had wore against the other and rubbed the threads off. Sometimes thread protectors were apparently knocked off in that way. I do not know that a majority of those that I marked J. were not jammed in this way. I don't think there was any material difference in the pipe strung along the line, and the pipe at the stations as to the jams on them. Mr. Hoskins frequently said that he didn't believe what we saw was enough to condemn the pipe, and then we would pass it. This was done hurriedly, sometimes we argued it. Kilgore visited us once, and I showed him the kind of joints that I thought ought to be condemned. Sometimes we removed the thread protector in whole or in part to see how far it went. We did not inspect on the subject of taper at all at that time. Very little of this pipe had been inspected before by anybody. We sometimes ran on to a joint on the line that was



thrown out marked in white lead "condemned." The defect in such case was usually a hole in such pipe. I would not suppose there were more than fifteen or twenty such pieces. At the different stations I didn't find any pile that had been sorted out and put on one side as though condemned. In my opinion the threads could not easily have been jammed in the way I have described, by throwing one piece of pipe on to another on to the piles if there was nothing between. It was simply a rubbing off of the thread. There wasn't a half dozen that showed that they had got a blow that staved the side in. They were apparently rubbed off. I don't think I ever made a written report of this particular feature. I think I told all the different conditions of the pipe to Mr. Smith. After Mr. Kilgore came down, my associate inspector and I did not have disputes. Kilgore showed us what he thought ought to be a condemned joint of pipe. When I came to one like that I called his attention to it, and he accepted it. When it was not like that and was not a jam or defect as he had described it, I didn't  
233 show it to him at all. I knew he wouldn't accept it. I didn't understand when he came down there that he told Hoskins to set down everything that I found any fault with. After, there were certainly cases where we didn't always agree, but we got along better after Kilgore was there. The majority of the pipe that I condemned was used right along in making the new line with the Hequembourg collars; sometimes some of it was re-threaded with a machine. We didn't inspect the pipe that was laid at Deep river. I took it up and relaid it. It was in the ground at the time we were making our inspection. There was quite a little pipe strung on the line at different points that we hauled to Deep river and re-threaded.

I looked at the threads on the pipe at Deep river after it was dug up, a good deal of it. Sometimes when pipe was iron calked, it would strip the thread off in unscrewing it. A great deal of it was iron calked. There was not much re-threading done, except on that pipe which was dug up at Deep River. I saw the pipe I had condemned go right in line day after day. The bridge in the marsh was made to keep the men out of the water and the pipe out of the water when it was being screwed together.

#### *Re-direct Examination.*

The reinforced collar had about five-eighths of an inch recess before it was reinforced; afterwards about an inch and an eighth. Starting or stopping suddenly in my opinion would produce the injury to the thread of the pipe which I have described. After Kilgore visited us, we acted upon the standard that he had laid down

for us or nearly that. The total length of the pipe condemned according to these reports was between ninety-four and ninety-five thousand feet. We had a threading mill at Deep River and one machine at Greentown. At Deep River we had three or four machines. All the machines were operated by steam. There  
 234 was a threading machine at Kokomo. The Tolleston marsh is eight or ten miles from the pumping station at Deep River.

Thereupon the plaintiff to further maintain the issues on its part recalled WILLIAM QUINN as a witness, and the following proceedings took place:

"Q. You have stated, I believe Mr. Quinn, that you were acquainted with the method of manufacturing eight-inch line pipe, standard line pipe, at the National Tube Works Company in the year 1890? A. I was, yes, sir."

"Q. You were acquainted with the method of manufacturing that kind of pipe by that company in the year 1891? A. Yes, sir."

"Q. State whether or not so far as you know, any change had been made in the manner of manufacturing eight-inch line pipe or the character of eight-inch line pipe manufactured for that company between the years 1890 and 1891? A. To the best of my knowledge and belief there was none."

"Q. You have already stated that you were personally cognizant of the fact that some eight-inch line pipe was shipped by the National Tube Works Company to the right of way of the Columbus Construction Company at Ainsworth, Indiana, in the year 1891? A. I was, yes, sir."

"Q. Do you know the purpose for which that pipe was shipped by the National Tube Works Company to the right of way of the Columbus Construction Company?"

(To this question the defendant objected upon the ground that it was immaterial; and thereupon the court sustained the objection; to which ruling of the court the plaintiff, by its counsel, then and there duly excepted.)

235 "Q. You may state whether or not you saw that pipe which you say was shipped from the National Tube Works Company to the right of way of the Columbus Construction Company at Ainsworth, Indiana, after its arrival at that point? A. Yes, sir."

"Q. What was done with it? A. The pipe was taken out of the line of the right of way and laid along the ditch preparatory to laying."

“ Q. You may describe to the jury now the manner in which  
“ that pipe was laid on the right of way of the Columbus Construc-  
“ tion Company.”

(The defendant, by its counsel, thereupon objected to this question upon the ground that it was immaterial, and the court sustained the objection; to which ruling of the court in sustaining the objection the plaintiff, by its counsel, then and there duly excepted.)

“ Q. I will ask you what you had to do, if anything, with  
“ the matter of the laying of that section of pipe ?”

(To which question the defendant, by its counsel, then objected as immaterial, and the court sustained the objection; to which ruling of the court in sustaining such objection the plaintiff, by its counsel, then and there duly excepted.)

“ Q. After that pipe was laid on the line of the Columbus  
“ Construction Company did you witness any tests made in line  
“ upon it ?”

(To which question the defendant, by its counsel, then objected, and the objection was sustained by the court, to which ruling of the court in sustaining such objection the plaintiff, by its counsel, then and there duly excepted.)

236 “ Q. Do you know what degree of pressure was applied to  
“ that pipe after it was laid in line, and with what medium  
“ that pressure was made ?”

(To which question the defendant, by its counsel, then objected, and the objection was sustained by the court, to which ruling of the court in sustaining such objection the plaintiff, by its counsel, then and there duly excepted.)

“ Q. What number of tests, if any, were made by you, or  
“ under your supervision, or did you witness upon that line, of  
“ eight-inch National Tube Works pipe ?”

(To which question the defendant, by its counsel, then objected, and the objection was sustained by the court, to which ruling of the court in sustaining such objection the plaintiff, by its counsel, then and there duly excepted.)

“ Q. You may state whether or not you had been instructed  
“ by the National Tube Works Company to supervise the tests  
“ made upon that line—upon that pipe in line, and reported to said  
“ company the results of said tests there made ?”

(To which question the defendant, by its counsel, objected as leading and immaterial, and the objection was sustained by the court, but not on the ground that the question was leading, to which ruling of the court in sustaining such objection the plaintiff, by its counsel, then and there duly excepted.)

“ Q. Did you, or did you not, after the making of these  
“ tests, report to the National Tube Works Company the results  
“ thereof ?”

(To which question the defendant, by its counsel, then objected on the ground that it was immaterial, which objection was sustained by the court, to which ruling of the court in sustaining such objection the plaintiff, by its counsel, then and there duly excepted.)

237 “ Q. Do you know whether or not the National Tube Works  
“ Company, at the time this test line, or mile of pipe was sent to  
“ the right of way of the Columbus Construction Company at  
“ Ainsworth, Indiana, was contemplating the making of a contract with the Columbus Construction Company for furnishing  
“ pipe with which to complete the line then being laid by the National Tube Works Company ?”

(To which question the defendant, by its counsel, then objected, which objection was sustained by the court, to which ruling of the court in sustaining such objection the plaintiff, by its counsel, then and there duly excepted.)

“ Q. After your report to the National Tube Works Company, if you made such report of the results of the tests which  
“ you witnessed on this pipe laid on the right of way of the Columbus Construction Company, what did the National Tube Works Company do, if you know, with reference to furnishing  
“ pipe for the completion of said pipe line ?”

(To which question the defendant, by its counsel, then objected, which objection was sustained by the court; to which ruling of the court in sustaining such objection the plaintiff, by its counsel, then and there duly excepted.)

“ Q. If, after witnessing any tests in line upon the pipe of  
“ the National Tube Works Company laid upon the right of way of  
“ the Columbus Construction Company at Ainsworth, Indiana, you  
“ found defects in the line under the pressure there applied, to  
“ what did you attribute those defects ?”

(To which question the defendant, by its counsel, then objected, and the objection was sustained by the court; to which ruling of the court in sustaining such objection the plaintiff, by its counsel, then and there duly excepted.)

238 “ Q. If you witnessed a test of the National Tube Works' pipe  
“ in line at Ainsworth, Indiana, you may state the amount of  
“ pressure placed upon the line, and the medium with which the  
“ pressure was applied, and the result thereof, as to the number of  
“ leaks and the amount of leakage ?”

(To which question the defendant, by its counsel, objected, and the objection was sustained by the court; to which

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ruling of the court in sustaining such objection the plaintiff, by its counsel, then and there duly excepted.)

“ Q. From your knowledge of the manufacture of eight-inch standard line pipe in the mills of the National Tube Works Company during the years 1890 and 1891, how did the pipe shipped to the line of the right of way of the Columbus Construction Company at Ainsworth, Indiana, in 1891, compare with the eight-inch standard line pipe manufactured by the said company in the year 1890 ? ”

(To which question the defendant, by its counsel, then objected as immaterial, and the objection was sustained by the court; to which ruling of the court in sustaining such objection the plaintiff, by its counsel, then and there duly excepted.)

“ Q. How did the pipe shipped to the right of way of the Columbus Construction Company and laid in line near Ainsworth, Indiana, in 1891, compare in manufacture and character with the pipe shipped by the National Tube Works Company to the Crane Company for the Columbus Construction Company under the Crane contract in the year 1890 ? ”

(To which question the defendant, by its counsel, then objected on the ground that it was immaterial, and for the further reason that the witness had not said that he knew anything about that shipment under the Crane contract; thereupon the court sustained the general objection; to which ruling of the court in sustaining such objection the plaintiff, by its counsel, then and there duly excepted.)

239 (The witness then proceeds to describe the method of loading pipe on the cars at the mills.) The pipe is rolled from the pile of pipe up to the top or sides of the cars and then dropped in the cars. The bottom layer drops some three or four feet, according to the height of the sides of the car; no ropes are used in loading them in this way, so far as I know. The lower tier drops from the top of the car down to the bottom of the car. These cars are ordinarily gondola cars. To the best of my knowledge and belief there is nothing put between the layers of the pipe as they are loaded in the cars by the mill company. This was the method of loading cars in 1890.

#### *Cross-Examination.*

I saw pipe loaded on the cars in the mills of the Pittsburg Tube Company, the Pennsylvania Tube Company, Spang, Chalfant & Company and the National Tube Works along in the latter part of 1890 or the first part of 1891. Was at Spang, Chalfant's

two or three times in the year 1890. I saw possibly one or two cars loaded in the manner I have described at Spang, Chalfant's. I was at the mill on a friendly visit. I went to see the workmen in the mill; I saw a friend there; I cannot recollect who. I cannot say who the friend was I saw on the visit when I was standing around where they loaded pipe into the cars. I saw one friend whose name was "John"; I do not remember the other name. It is an improper way to load pipe into the cars. I did not think at that time it was an improper way.

ELWOOD HAYNES, a witness called on behalf of the plaintiff, testified as follows:

I live at Kokomo and am superintendent of the Kokomo division of the Indiana Natural Gas and Oil Company, and have been about five years. In the winter of 1890 and 1891 I was living 240 at Greentown, Indiana, as field superintendent for the Columbus Construction Company; had charge of the drilling of gas wells, some business in connection with the leases of land, with unloading and tallying of pipe and receiving other material that was shipped into the field at that time. Had charge of unloading pipe for the Columbus Company at Greentown in the summer of 1890; that was ten-inch pipe. (Witness describes the laying of the 1,000 feet of eight-inch pipe at Greentown substantially as described by witness Coyle; and also describes the test made on that line—it showed leakage.) We could hear the gas escaping at different points; poured water on the pipe and saw the bubbles of gas escaping through the water. Prior to this time I had had experience in the measurement of gases in college, the calculation of volumes under varying pressures. I was at the Polytechnic Institute at Worcester, Massachusetts, for three years, and afterwards, in 1885, spent a year at Johns Hopkins University, Baltimore, Maryland, and had taught in the Normal College at Portland, Indiana. We first tried to stop the leaks by tinning or soldering a joint. It resulted in failure; then put on a clamp over the pipe at each end of the coupling and think lead was run in from the ladle. This failed to stop the leaks; then tried flange unions and succeeded in obtaining a tight joint in the thread, but there was some leakage in the flanges. Next laid a line on top of the ground, screwed into ordinary couplings, with two iron bands around each end of the couplings. This was tested with six hundred pounds pressure. There were a few cases of very slight leakage, which we calked up with lead. The line was exceedingly tight then, almost no leakage at a

pressure of 600 pounds. This was in the latter part of April, 1891, and the other experiments that we made before this one with re-inforced couplings were all made, I think, in April. This short line with re-inforced couplings was laid out of the ground, not covered in any way. It remained under pressure for, I think, a week or two, and the pressure was substantially stationary. It would go up a little in the middle of the day, owing to the increase of temperature, and fall a little in the evening.

241 Laid a ten-inch line with ordinary couplings; it leaked pretty nearly as much as the eight-inch line. We then put on the heavier Hequembourg couplings on the same pipe, calked a few small leaks with lead, and the line was tight. Afterwards took up the 1,000 feet of eight-inch pipe, replaced the light couplings with the heavy couplings called the Hequembourg couplings, put the pipe together about as we did the first time; it was put back into the ditch, put on 600 pounds pressure; the line showed extremely small leakage; we calked the leaks with lead; the leakage was almost entirely shut off. If it showed any leakage after the calking was put in the calking was continued under pressure until a perceptible leakage was entirely remedied. Shut the pressure off and it remained in the line for three or four weeks, during which time I think there was no perceptible variation in pressure. This 1,000 feet became a part of the main line. I compiled the reports of the inspection of pipe made by Coyle and Hoskins, writing them out on large sheets of paper, and then they signed the sheets thus made out after comparing them with their original memorandum to see that they were correct.

#### *Cross-Examination.*

There was no daily report sent in to the company in that way at all; no report sent in to the company to my knowledge. I was the one to have sent that in. There is not a leaf that was ever filled and put in an envelope and mailed of these reports. I do not think it was mailed. I have an impression that these papers were delivered to Mr. Coyle at Greentown after they were signed and he took them to Chicago in the same form that they are now in. Mr. Smith directed me to attend to putting this inspection in shape. We made those tests at Greentown one after another as rapidly as we could make them.

242 I was then field superintendent for the Columbus Construction Company. Smith was present at the test of five or six pieces of eight-inch pipe that we screwed together with reinforced or banded couplings. He was general manager of the company at that time. Hequembourg was also present at the test with the reinforced couplings. The Crane Company had no representative



at these tests, nor anybody representing the mills, except that Mr. Quinn was there at one of these tests. I made some memoranda as to these various tests, but do not know where they are, and I reported them to the company. Do not think I reported the test with the reinforced couplings, because Hequembourg and Smith were both present.

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*Re-direct Examination.*

The natural gas in Indiana contains sulphurous ingredients and it has a corrosive effect on pipe in which it is conveyed where there is a leak so that the gas comes into contact with the air and moisture.

*Re-cross Examination.*

I made an analysis of a specimen taken from a broken pipe some time in the last winter or spring, a few months ago. One of the men brought a piece of service pipe six or eight inches long with everything in it just as he found it, to me. Escaping gas will blacken the ground. If there is gas escaping and there is water with it the sulphurous element will soon eat and break down the pipe.

CHARLES E. HEQUEMBOURG recalled, a witness for the plaintiff, testified as follows:

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I had a conversation with Mr. Foreman at the Crane Company's office about the time he gave me the paper called the approximate estimate in which he said he would let me know when he wanted 243 delivery points. He told me he would let me know when he was ready to begin deliveries. I received no word from him in regard to that matter up to about the 23d of July. At that time tools had been procured on the ground, the men were there to take charge of the work within immediate reach by telegram or letter, the right of way was being put in shape, bridged and cleared for the distribution of pipe, stations for the delivery of pipe had been arranged for, and the route over which the pipe was to go from the stations to the right of way all planned and figured out. The first pipe received at any of these stations was about the 23d of August. Prior to that time quite an amount had been delivered to the Consumers Gas Company of Chicago on request of the Columbus Company under this contract, about twelve miles, as I recollect. I speak of the entire amount delivered to the gas company, whether before or after August 23d. The pipe was laid along the line dur-

ing the fall of 1890 at the Tolleston marsh, at Deep River and at Kankakee. Laying began first at Tolleston marsh. This marsh during wet times is all a flood in the direction of our line, which is about 7,800 feet in length, the water varying on the marsh from six inches to fourteen or fifteen feet in the river, and in swales deeper than on the average level of the swamp; the ground very difficult to get through under ordinary conditions. At the time we began laying the pipe, it was unusually dry and favorable for laying pipe. We took advantage of the natural conditions and laid that pipe first. The character of the country in the Kankakee section is more favorable, but still more or less miry. At this time, about October 1st, it was unusually favorable. The Deep River section was between the Kankakee and the Tolleston section. We were there building a proving station with which to prove the line north-west to the Illinois line at 106th street and south-east to the

Kankakee river. Was not on line continuously. Left Chicago about the 16th of August and returned about the 9th of September. Was in bad health at that time. During my absence received a telegram from the Crane Company relating to this pipe which is as follows:

“SEPTEMBER 5th, 1890.

“Dated, CHICAGO, Illinois.

“To C. E. Hequembourg:

“All mills working on eight inch except National, who are shipping ten inch. National and Pittsburg Tube Company are having a good deal of trouble with their gas supply. Page was delayed for a few days on account of poor iron. We are doing all in our power to hurry this pipe. Sixteen cars shipped Wednesday and thirteen yesterday.

CRANE CO.”

When I returned, pipe laying was going on in the Deep river division, each side of the pumping station. There were three gangs in the field: one engine gang, and two tong gangs. (Witness then describes the laying of pipe south-east from the pumping station substantially as it has been already described by other witnesses, including the cleaning of the pipe and the threads, taking off the thread protectors, etc.) The pipe was strung along the right of way with the collar end lying in a south-easterly direction from the pumping station. Pipe was rolled up by hand and with a rope after it had been properly entered in the collar by the stabber. When it got so it didn't turn easy they put on the tongs. Back-up tongs were put on behind the mill end of the pipe or last collar in the completed line. They were laying pipe this way about the 11th of September on top of the ground; there was no ditch there.

245 The ground south-east from the pumping station for a distance of possibly half a mile was almost level. From there it began to drop into lower ground and rolling country. Wherever there were sharp knolls that interfered with the grade of the pipe it had been dug down so that the pipe would reasonably conform to the surface of the ground without any particular change. Saw pipe laid north-west from Deep river; work done substantially the same way except that there some of the pipe was screwed together and immediately laid into the ditch. There would be from two to six joints of pipe suspended in this process; usually about four. The pipe was held up by ropes. Saw pipe laid by machine near the boarding house at Ainsworth for our employes. Back-up tongs are applied at the same point that they are in the other way of laying; behind the collar on the last joint laid. (Witness describes method of laying with a machine substantially as given by other witnesses.) I only remember of seeing two pipes bent in the fall of 1890. These bends were made with fire. I did not know of any better way of laying pipe than the way I witnessed at that time. Have often seen pipe bent before this. There was two methods, by fire and bending it cold. Not practicable to lay pipe in the ditch, though it can be done under extraordinary circumstances, like going under a railroad track or something of that kind. The compressor put in at the Deep river station was a duplex air pump, about 500 rated horse power, having a capacity of 3,600,000 cubic feet of free air running at maximum speed, and would maintain a pressure of 100 pounds to the square inch. At a minimum speed it could be run higher; have run it at 150 pounds to the square inch. It was put in to pump the air up to about four atmospheres, to be re-pumped by a machine connected with it to 1,000 pounds to the square inch for testing the pipe when laid in line with air. There was another machine put in, a Norwalk compressor, about 250 horse power with two air cylinders to take the air from the Clayton compressor, which was the large one, 246 and compressed it to a certain stage, and from there took it to a thousand pounds. It had a capacity to take and deliver at a thousand pounds, two million feet. It was being drawn to the foundations about the 16th of October, 1890. The line leading south-east wasn't completed prior to the first test; that was made from the 17th to the 19th of September, when the pipe to the south-east had been laid something like two miles. The pipe was plugged up, gauge put on, the air was taken from the engine-room, put through the compressor and run out into a system of cooling pipe through the mill pond adjacent to the station to get it to a normal temperature, then admitted through a pipe connection into the line and filled to the capacity of the pumps or to the desired pressure,

then disconnected and sealed up and used as a reservoir. The pressure at the first test was less than 100 pounds. I observed the gauge while the pipe was under pressure. Pressure fell so that if kept up pipe would empty itself in about ten hours. Went over the line about half a mile. My recollection is now that between ten and twelve per cent. of the joints leaked. Pressure not kept on very long. After this test the other pipe, south line east, was connected up and tested in the same manner. The pipes running north-west were connected up and tested in the same manner. The result of these tests on the different lines just mentioned was substantially the same. My recollection is now that between ten and twelve per cent. of the joints leaked. The greater number of leaks were on the mill side of the collar. Continued to make tests thereafter continuously. Up to the 30th of September pipe-  
247 laying continued. I had pipe laid which I particularly observed after seeing these air tests, then had pressure turned on to see if there was any difference between that and those already laid out, but could see none. After the first test I told Mr. Foreman, prior to the 30th of September, what I have said here in regard to the tests of the pipe. He made an appointment to go down with me about the 30th of September, and did so with Mr. Kilgore. Mr. J. S. Smith and Mr. Walter Scott were also with me. Air was put on all the lines at considerable less than 100 pounds; my recollection is it could not be got above 60, in the presence of Mr. Kilgore and Mr. Foreman on that day. Same results were noted on this as on the former tests. Mr. Foreman and Mr. Kilgore went over the lines with me for the purpose of making observations as to leaks. First went from where the Grand Trunk right of way crossed our right of way south-east to the pumping station. Later in the day went over the portions of the pipe that had been laid with the engine north-west of the pumping station. Possibly pipe laid with a machine was a little better than the other.

I had a conversation with Mr. Foreman that day after observing the results of the tests; the question why it should leak was under consideration, and I said to him that our men had put this pipe together with the greatest possible care and attention and there appeared to be more leakage developed from the mill side of the collar, than from the field side under very light pressure, and I objected to receiving any more pipe until I was satisfied that when the heavier pressures were applied the pipe would meet the guarantees of the contract, 1,000 pounds to the square inch, and be  
tight, that a question of workmanship was involved there, and  
248 I suggested that it would be wise to come down there with our men and tools and material, and see what they could do with the material, or bring new material and new men—his own

men—and tools and show us that out of that material a proper line could be constructed. He made substantially no answer to that offer. I told him we were expecting the Norwalk compressor every day, that it had been delayed, and we hadn't it, and that until such time as we had it and could apply a full test, I objected to receiving any more iron, unless he could satisfy me that it would meet the guarantees of the contract. He either suggested to me then or told me a day or two afterwards that he had suspended shipments of pipe from all the mills until that matter could be ascertained; whether the pipe, being shipped, would meet the guarantee of the contract. There is a strain of a ton to every twelve or fifteen degrees of temperature change, depending upon the quality of the iron, pulling apart on the iron, so that when there is any defect it will open. Several methods of calking joints tried when Mr. Foreman and Mr. Kilgore were there on the 30th of September. Mr. Kilgore suggested a saddle for temporarily taking care of the leak in the pipe itself, and a different kind of a lubricant from the kind we were using—something like litharge, I think it was. A saddle is not practicable, and in connection with water and gas it is not durable. Oil is used as a lubricant by the mills in putting on the collars. I know of no cement which in my opinion would be effective in making a tight joint in a gas line pipe at a high pressure, say 300 pounds. Mr. Foreman came over to my office in reply to my letter of October 1, 1890; either on that day or the next. He said in substance that he had ordered the suspension of shipments until 249 such time as it could be determined whether it would meet the guarantees of the contract or not, and I renewed to him my suggestion made at Deep River on the 30th. I asked him to come up on our right of way and using our tools and this material, or our men or tools and material and men of his own and put together, if he could, a tight line. He made substantially no answer to that part of it. I asked him if he was protected in his payments so that he could require the mills to meet their contract guarantee. He told me that he was. The Crane Company and its representatives never did attempt to lay any portion of this pipe in line on our right of way for the purpose of determining whether it could be made tight. I was down on the line two or three times possibly after this that fall. Such a line as the Deep River section of line could not practically be used for the transportation of natural gas for the distance contemplated by our line. Gas could not be conveyed by a line in that condition from Greentown to Chicago. I left the line about the 17th of October, 1890; soon went to Europe on account of the bad condition of my health. Returned to this country on

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the 4th of March, I believe, in 1891, and in two or three days came out to the line, being there first on the 9th of March. At that time the pipe was all in the ditch, covered up, except a few joints that were uncovered near the station. The high pressure compressor was then in position and in operation. The pressure was put on the lines running south-east from Deep River, 600 pounds, then detached and the fall of the pressure observed. The pipe leaked about thirty-two per cent. of its contents in twenty-four hours. About the 27th of March, 1891, I noticed where there were two flange unions on the pipe in water while there was a leak between the faces of the flange unions there 250 was no leak around the thread. All of our flange unions had an annular dove-tailed recess which would allow for lead calking. By means of some sticks acting as a kind of caliper, them on a putting Crane collar on the line in the ditch, I determined for myself that there was one hundredth of an inch circumferential expansion. I had some tests made at the National Tube Works at Pittsburg for expansion under my hydraulic pressure. Had these flanges sent to Greentown, had them screwed up together in the ditch, submerged in water, the end plugged, and pumped in 600 pounds of gas and found all the joints absolutely tight as far as the threading was concerned. I think there were six pieces of pipe included in that. Cost of such a flange, union or market value, at that time to the best of my recollection would be about \$8.25, exclusive of the work of putting the flange union on. (Witness then describes the test of the 1,000 feet at Greentown as already described by other testimony.) Gas could not have been transported in such a line from Greentown to Chicago. Tried pouring hot lead in the Spang-Chalfant collar, which has a recess, and putting a clamp on that, taking a bar of lead of proper shape with the Reading collar and put it around the pipe, pulling it into the collar and then clamping it. In neither way could we make a tight joint. Also tried soldering the joint. Failed in those attempts. Then had bands forged and put upon a coupling reinforcing it, had the bands shrunk upon the couplings, both ends, and the edges swedged down so that we had a recess for lead calking. Laid a line about eighty feet long with those couplings on top of the ground, had pressure of 600 pounds put upon it after it was screwed together and 251 plugged up at the ends. With the exception of a little leakage at two of the joints they were perfectly tight. We ran lead into those joints and calked them up and the pipe was absolutely tight under all conditions there for a number of days. The cost of reinforcing the coupling in that manner is something like \$3. I also had an annular recess cut out to a dove-tail on



the Crane coupling, but in cutting it out sufficiently deep to admit lead calking the coupling was too light, and when we attempted to calk, would spring. As to the reinforced coupling, I found that in attempting to make a large number of these couplings the shrinkage of the ring drew the coupling out of conformity so that it could not be screwed up without great difficulty. This made an uncertain joint. The next effort I made to remedy these defects substantially was the heavy collar. When the pipe was laid we laid it in reverse curves so as to give at least five feet slack in the mile to prevent the stress of temperature on the joints. This heavy collar being put upon the pipe, if there was any imperfection in the threading, either upon the collar or the pipe, and under internal stress it leaked, the joint could be filled with lead and calked up and made tight. Saw a test of 2,000 feet of pipe with the heavy collar at Greentown, under 600 pounds. The line was tight and is part of the main line today. When a number of Crane collars of different makes were brought into Greentown I examined them for thread and taper both, and found that with the exception of one make of collar there was no uniformity of taper. By uniform taper I mean a taper on a collar that runs through on the same angle that it enters. I think I may have examined some fifty or 252 sixty couplings. Seventy-five per cent of the threads on those collars that I examined was good, and twenty-five per cent was bad, having various defects. Along in the fall of 1891 I saw some tests on the line which had been laid across the marsh; in the meantime that and the Deep river section had been connected. The line was under water at that time and the leaks in the pipe threw the water from quite numerous bubbles to six feet in height. I think there were more than ten per cent of the joints leaked and less than fifty, but I could not count them. Those tests were made as soon as the line was got to a point where connections could be made and air supplied them. If there is an opening between the pipe and the collar the internal pressure is upon the side of the pipe that is screwed into the collar to the extent of the opening between the collar and the pipe; it is balanced; no pressure upon pipe screwed into the collar, but all the internal pressure is transferred from the pipe and sustained alone by the collar to the extent that the two pieces of iron are separated. This pressure acts as a wedge and forces its way to the front of the joint and produces leakage through the expansion of the collar. The other collars, besides the Reading, have a recess very much like the Spang, Chalfant & Company's. Some go in straight; others more or less beveled,



not parallel with the outside surface, and all about the same depth; from three-eighths to one-half inch. After the tests made at Greentown with the heavy collars calked with lead, I entered into communication with different mills and the Crane Company, with a view to obtaining heavy collars. Had an interview with Mr. Gilbert, vice-president of the Crane Company, here in Chicago; told him of the tests we had made and the results our  
253 desire to obtain through them and other parties heavy collars to substitute in exchange for the light collars. He agreed to take up the matter and see if he could not make us some collars. I gave him a sample collar, which he took with him. He finally submitted to me a sample collar concerning which I wrote to him. I made attempts in the same direction with the Page Tube Company; also with a representative of Spang, Chalfant & Company, National Tube Company, and the American Tube Company. Finally got the heavy collars from the last two companies. The number of couplings to supply the Crane pipe was from twenty-six to 33,000; I do not remember the exact number. The old collars on all the Crane pipe were taken off and the pipe that had been laid was relaid with heavy collars until all the Crane pipe was laid with heavy collars. There was something like eighty-six miles of Crane pipe that had been distributed, but had not been laid. In order to take up the pipe across the Tolleston marsh we built a bridge 7,800 feet in length. The pipe was unscrewed and screwed together on the bridge, drawn up and laid on the bridge for unscrewing and relaid with the new collars in the water. Defective joints of pipe had to be carried along the bridge to the shore, and the heavy collars put on the pipe and then taken back. All the joints going through this marsh were calked in addition to screwing up. In Deep river the pipe was taken up and relaid. Where the joints had been calked and the threads were injured by screwing them out, they were taken down to the thread mill at Deep river and re-threaded and brought back with the heavy collar on. Where they were not materially injured the light collar was taken off and the heavy collar substituted. The threading mill was at Deep river. We had a threading machine at Greentown, at Kokomo, and at South Chicago, or East Chicago, a city in Indiana. During the time these collars were being removed, I examined the pipe for evidences of damage to it in the manner in  
254 which it had been laid originally. Did not discover anything. The line was completed with the new collars in August, 1892. Iron calking does not amount to anything. It is making a good joint only for the time being. Every time the

temperature changes or the pressure varies, the contact is disturbed and a leak will be produced. Where this Indiana natural gas comes into contact with iron where there is moisture it appears to eat it away. A large percentage of the joints made with Crane pipe were calked. There should be two inches uniform thread and taper between the pipe and the collar in order to produce a tight and permanent line. I have seen an eight-inch pipe move out of direction three or four inches from expansion. Have seen a small line that had no particular weight move six feet away. The effect of temperature strain on a joint if it is not perfect is to pull it apart. Each twelve or fifteen degrees of change of temperature produced upon a square inch of section of pipe a strain equivalent to one ton. If the joint is not perfect it will pull apart under that strain. There should be no effect upon a joint in an eight-inch standard line pipe having two inches of uniform taper and threading in the pipe and collar without material defect from putting pipe in the ditch in the manner in which I have described. I examined the Crane pipe during the years 1890 and 1891 for the purpose of ascertaining the threading on the pipe, and of that that I examined I found about twenty-five per cent of the threading defective for various reasons. Some defects due to lamination of the iron, dull threads imperfection due to weld coming through the pipe in cutting the thread so as to take a straight line out of the thread, some round threads where a portion of the pipe had evidently come in contact with some body, and motion enough to blunt a portion of the thread for a small spot. To the best of my recollection the new collars purchased, which I stated were from 26,000 to 33,000,

cost in round numbers, \$104,000. The pipe that was furnished to complete the line had the heavy collars on. In

the \$104,000 is included some 2,400 or 2,500 couplings received from the National Tube Works Company in the way of a compromise. These were heavy couplings and were charged up at the rate we were paying for couplings at that time. The Crane couplings that were taken off the Crane pipe were sold. Before selling them I sent a letter to the Crane Company, as follows:

"May 18, 1892.

"To Crane Company, 10 North Jefferson Street, City.

"Gentlemen: This company desires to call your attention to the fact that they have for sale, at various railway stations in Indiana, twenty-six thousand, more or less, of eight-inch line couplings, which couplings were delivered by you to us, on pipe

said to have been made by the Paige Tube Company, Morris Tasker & Company, Pittsburg Tube Company, Reading Iron Works, and Spang, Chalfant & Company. These couplings have been removed from pipe and are practically in as good condition as when furnished to us. Sealed proposals for the above described couplings will be received at the office of the company, at the above address; said proposals will be opened on Friday, 27th inst., at 12 o'clock, noon. This company reserves the right to reject any and all bids. We would very much like to have you send us your proposal to purchase the whole or any part thereof.

Yours very truly,

C. E. HEQUEMBOURG,  
President."

Similar letters were sent to Morris Tasker & Company, Paige Tube Company, Pittsburg Tube Company, National Tube Works, and the American Tube and Iron Company. The couplings were sold to the last named company, which has its works at Youngstown, Ohio, and Middletown, Pennsylvania. I saw certain couplings at Robert Tarrant's shop, in the city, having marks on 256 them "K" and different numbers. Have seen some with similar marks on them in the court room. I saw those couplings under pressure during the last trial in a section of pipe. One thousand pounds of air and 1,000 pounds of water was applied, and there was expansion of the collar and leakage. During the present trial I have seen a similar application with water. The result was expansion and leaks. Four collars were in the section. The attorneys of the Crane Company were present, and Mr. Kilgore was, and some other people. An eight-inch line, intending to carry natural gas at a high pressure, 300 pounds to the square inch, 116 miles long, would be worthless in the condition of the pipe which I saw at Tarrant's shop. In my opinion the tests at the mills have no value in determining whether the joint so tested will hold gas under high pressure. Gas has less specific gravity than air. Our natural gas would more readily pass through an aperture in a joint of a gas line than air. The pressure of illuminating gas in the city is a few ounces. In my experience it is cheaper to make repairs, cutting pipe where necessary and threading where necessary, along the line with such appliances as we had than re-shipping the pipe to the mills for the purpose of having such repairs made. From Warren, Ohio, where the Paige Tube Works is, to Ainsworth, is about 400 miles; to Pittsburg, where the National is, more than 400 miles. Pittsburg Tube Company and Spang, Chalfant are also

there. To the Reading Iron Works, and Morris Tasker & Company, is very near 1,000 miles. They are in the vicinity of Philadelphia. My opinion now is, from my examination of the coupling and from my experience, that they could not be used in the construction of this line interchangeably and make a tight line. Am familiar with the process of removing a defective coupling in the operation of a gas line. It is laborious and expensive to do so, and process involves danger to any other weak joints in that part of the line, and the operation of the line is suspended while repairs are being made, except it be done by application of a leak clamp, which is only a temporary expedient. In a line of eight-inch standard gas pipe, where you have uniform taper in pipe and collar and perfect threading, the joint ought to be stronger than the pipe. At the conversation with Gilbert, early in the spring of 1891, at the office of the Columbus Company, I said to him that we thought that we had found a means for remedying the troubles in the heavy joints; that I would like to have him, if they were so disposed, go down to Greentown, or anywhere else that they had facilities to make examinations themselves, and see if they could do better. None of the representatives of the Crane Company did go upon the line or make any suggestion as to the manner in which the defects complained of could be remedied, after this talk. In laying this line from Greentown to Chicago there were appliances put in line such as are usually put in natural gas lines for the purpose of shutting off the gas, known as gate and check valves. These valves are liable to get out of order and suddenly close the pipe. If the line were under operation at a pressure of 300 pounds, there would temporarily be an increased pressure put upon it. If the force were continued, something would have to stop or burst. In my judgment an eight-inch standard line pipe, intended to carry natural gas at a pressure of 300 pounds to the square inch, should be tested after being put together in order to constitute a tight and permanent line, and as a factor of safety to 600 pounds or more, double the operating pressure. I sent a letter to Mr. Gilbert.

Thereupon the plaintiff, to further maintain the issues on its part, offered the said letter, thus referred to by the witness, from C. E. Hequembourg, president, to A. M. Gilbert, Esq., vice-president Crane Company, dated the 27th of August, 1891, 258 which said letter was as follows:

"August 27, 1891.

urg "A. M. Gilbert, Esq., V. P. Crane Company, City.

"My Dear Sir: Complying with our understanding this afternoon, I herewith furnish you specification for a special eight-inch coupling, couplings to be made from soft, clean iron, all puddled stock, no scrap,  $1\frac{1}{2}$  inch thick by  $6\frac{1}{2}$  inch in width, to be made after the design known as the Hequembourg coupling,  $6\frac{1}{2}$  inches long over all, not less than 1 inch thick finished, tapered with  $\frac{1}{4}$  of an inch taper to the foot of screw, 5 inches of perfect thread therein, being  $2\frac{1}{2}$  inches on each side thereof, with annular recess for lead on each, end  $\frac{3}{4}$  of an inch in depth. All couplings to be reamed from the outside edge to the center to perfect taper before tapping, and the threading, when complete, to be in perfect alignment, to be equal in quality and workmanship to the sample coupling herewith furnished, marked "Exhibit A," and made part hereof.

"The eight-inch sample coupling made by the Pittsburgh Tube Coupling, submitted to us, in our judgment, is imperfect, and was not constructed in accordance with the sample furnished you.

"The main objection to the coupling is that its thread has not the proper taper extending from the outside to the center of coupling, but has, in fact, a taper extending but part way to the center, and from an intermediate point running past the center without taper. A coupling constructed on this plan cannot get proper thread contact when the pipe is screwed home in 259 it, and a large portion of the thread on the pipe is rendered useless. In one other respect the coupling does not come up to the standard of the sample; that is, the annular recess for lead. A careful examination of the sample furnished you, and reference to the specification for the coupling, will show that the dovetail for the lead joint is not properly cut, neither is the annular recess sufficiently deep, but there is more length of screw from end to end in the coupling than required.

Yours very truly,

(Signed) C. E. HEQUEMBOURG,  
President."

(And thereupon the defendant, by its counsel, objected to this letter on the ground that it was written after the suit was brought, and in reference to a matter not the subject of inquiry at the trial, and that it throws no light on the case; which objection was accordingly sustained

by the court, and the said letter was not received in evidence; to which ruling of the court in sustaining the objection to said letter the plaintiff, by its counsel, then and there duly excepted.)

Thereupon the plaintiff also offered a letter from C. E. Hequembourg, president, to the Paige Tube Company, bearing the same date, which is as follows:

"June 27, 1891.

"The Paige Tube Company, Warren, Ohio.

"Gentlemen: Last fall this company purchased from the 260 Crane Company, under a contract with that company, a large amount of eight-inch standard line pipe, and among their shipments to us we find pipe of your manufacture amounting in the aggregate to about 24½ miles.

"Our contract with the Crane Company contained, among other provisions, the following: That it will pay to the party of the second part all damage and expense of every kind which second party shall sustain by reason of any defect or defects in the pipe delivered to and including the time when such pipe is tested by the second party under working pressure not in excess of 1,000 pounds to the square inch, and proved tight in line, which working test shall be made with reasonable promptness."

"After laying some twenty miles of the pipe received from the Crane Company, and attempting to apply a working pressure therein greatly less than 1,000 pounds to the square inch, we have been obliged to abandon all efforts to do so on account of excessive leakage at joints. Structural weakness exists to such an extent in the collar of the pipe laid—and which must be taken up—that it is not possible, on account of leakage at the joints, to construct a pipe line with them that will meet the requirements of the contract. It is our desire to use this pipe if we can, in order to lessen as much as possible the loss which the Crane Company must suffer, and to that end we have adopted a collar substantially as per blue print enclosed, the specifications for which are as follows:

"Coupling to be 6¼ inch over all, tapped with ⅝ of an inch taper to the foot of screw, 5 inches of thread therein, with annular recess for lead on each end; said coupling to be made from soft iron, suitable for such purpose, 1½ inches thick by 6¼ inches in width, and to weigh, when finished, an average of forty-nine pounds."

261 "Repeated tests of this joint under working pressure of 600



pounds encourage us in the belief that a tight pipe line may be constructed by the substitution of this collar for the old one.

"If by the adoption of this collar we can make the pipe answer to the requirements of the contract, or nearly so, we desire to do so, as it is our wish and aim to make the loss arising from the failure of the Crane Company to keep its contract with us, fall as lightly as possible upon that company. We wish to save them every dollar we can.

"You will greatly oblige me by informing us at your earliest convenience at what price per collar and within what time you can furnish us in exchange for the collars now on the pipe of your make, as already stated, collars as above specified; and also, a separate proposition, at what price and within what time you will furnish us the collars specified without exchange.

Yours very truly,

(Signed) C. E. HEQUEMBOURG,  
President."

(The defendant, by its counsel, objected to this letter also; which objection was sustained by the court, and the letter was not received in evidence; to which ruling of the court in sustaining such objection the plaintiff, by its counsel, then and there duly excepted.)

I began business as a civil engineer in 1865. Before that had been in the army. Something of a land surveyor; not a very great expert. Was president of the Columbus Construction Company in 1890, and up to May, 1893; how long afterwards I don't know. The company has not been in very active existence since 1893. I was also engineer of that company. I had a salary and was also interested in the stock of the company, and am still a stockholder. Was one of the original stockholders and first officers of the company. Knew of the organization of the Indiana Natural Gas and Oil Company. The Columbus Company contracted with the Indiana Company for the construction and delivery of the pipe line to the Indiana Company. I was at one time an officer of the Indiana Natural Gas & Oil Company. Can't tell exactly when, possibly in 1891. Think I was vice-president and director of that company and a stockholder in it. Had known Stanford twelve years as field superintendent for the United Pipe Lines and National Transit Company. I have frequently observed the laying of lines that Mr. Stanford superin-



tended. I testified that I had known Mr. Jellison before I hired him, that he had been in the railroad business, but I confused him with a man named Morton. I had known him before that time. When I employed him the information that I had as to his experience and capacity in the matter of unloading and inspecting pipe was the man's appearance, his statements; his general make-up. We were not under any obligation to inspect any pipe. Experience in the matter of inspecting pipe was of consequence. Remember there was a document of instructions circulated among the men who had charge of unloading pipe. The inspection provided for in certain passages of these instructions which I have read is what I consider, based upon my experience, a merely casual inspection. I did not consider it a 263 casual inspection in 1890. There had been a material change in my opinion on that subject since 1890. In my view I was bound, if I took any material, to note an obvious defect. I consider that in 1890 such an inspection as is called for by these instructions could be made properly by a man who had never inspected a joint of pipe or thread or taper or a collar under proper instructions of a skilled man like Stanford. Did not inquire into Jellison's experience as an inspector of pipe. I regarded him as capable of inspecting pipe under the instructions of a skilled man like Stanford, though he had never seen a joint of pipe before. I don't know whether he ever was instructed by Stanford in reference to the inspection of pipe. Without instruction a man of his experience was not competent properly to carry out these printed instructions. I have known Button a good many years prior to his employment in 1890 at Bradford, Pennsylvania. He had been in the livery business. Never had had anything to do with line pipe to my knowledge. Thought if he was in the livery business and had driven around the Bradford field that he would have been an idiot if he hadn't known something about the oil business; thought he was a careful business man, and in employing him took in account the necessity or probability that he would be instructed by Stanford in his duties as an inspector, and think he was so instructed. Did not hear him testify that he did not carry out these instructions. Never learned that from any source. I was drilling wells in 1865. Assisted in laying a line several hundred feet in length, part two and part three-inch in size, in Tennessee. That was one of my first experiences in pipe laying. I first had to do with laying an eight-inch gas line in 1878. That was the Bradford line. Greatest length of wrought iron pipe in the Bradford line was twenty miles. This was about 1885. This was not part of the line

264 laid under my supervision. The line from Wilcox to Buffalo was the longest eight-inch wrought iron, screw joint, gas line that I ever had anything to do with. I had nothing to do with the laying of that line. I could not say whether the pipe was tapered or whether the collars were tapered. I do not remember having anything to do with any other eight-inch wrought iron gas line from the date of the construction of the Buffalo down to the year 1890. My impression is as to eight-inch gas lines which I have observed during the interval between 1885 and 1890, that they leaked. The Allison line did not leak. Lines made with the Allison up-set joint. I was employed first with reference to the Greentown and Chicago line in 1887 or 1888, by the Chicago Gas Trust. Was consulting engineer of the company. I made a preliminary study and investigation of the whole matter, including the building of a system of distribution in the city of Chicago, of pipe line from Chicago to the field, and the procuring of a field, and the drilling of wells and so on. The company had not already purchased the wells and determined upon building the line. There was a syndicate of gentlemen that had undertaken to get some territory in Indiana together, and finally did so, and drilled some wells. That syndicate finally became the Columbus Construction Company. I think it was finally determined to construct the line from Greentown to Chicago about 1888. From that time up to 1890, my time was not continuously given to that enterprise. I was also engaged in the gas and oil business in Pennsylvania. I procured the right of way and employed right of way agents. I did not testify that the men who had charge of the business covered by these instructions, "Exhibit O," were each provided with a copy. My personal knowledge extends just this far: that during the trial of the case here, I think the last time, or the time before, one of the employes handed me that paper; that is my answer.

Very little of my testimony on direct examination has been 265 given in a general way, where I had no personal knowledge.

I possibly may have made that distinction in my own mind in a number of cases where I testified to things as things I knew, when I only knew then in the general course of things. I could not tell you in how many cases I have done that. I should remember any particular case when I came to them, and should be very much pleased to tell you. I have a slight interest in the result of this suit. As applied to this case, my understanding of personal knowledge is broad enough to include what other people have told me. The longest line I knew of or had credibly heard of prior to the construction of this line, was from Wilcox

to Buffalo, on which the pressure was a little over 300 pounds. I have been told that they have had pressure of 800 or 900 pounds on lines six inches or larger, in 1890, in the vicinity of Pittsburg, but I have no personal knowledge. I do not know of my own knowledge of a line that was perfectly tight at a pressure of 500 pounds or more prior to 1890. Had my first conversation with Forman about the subject of this contract at our office, and had negotiations with him in New York, beginning about the 26th of June, 1890, some little time thereafter. Twelve miles delivered to the Consumers' Company of the first pipe received under the Crane contract, I think. About eleven miles of this went down, I think, into a main supply line in the field in 1892, I think; a mile laid in our line. Smith, Scott, Stanford, Raymond, Clark, Mosier and possibly Fred Hequembourg, were present with me at the test of the 17th or 19th of September. Joints of pipe ran closely on an average of nineteen to twenty feet. Exclusive of spliced joints, the shortest might be fifteen or sixteen feet, and the longest one twenty-one or twenty-two. In my previous experience I had generally found that the mill end leaked the most. Had no particular means of measuring the size of the leaks on the mill end and the field end. On a line 266 like this I would call a bad leak one that would leak two feet of gas an hour. One that could not be heard or seen, except with soap and water test; I would call that a small leak. Would call a leak that would leak ten feet of gas an hour a large leak. After Raymond's attention had been called to the fact that the line laid was not tight, I went out with him and observed a good many joints laid. Was there quite a part of one day, and should say I saw him lay fifty joints. I compared the pipe that he had laid under my observation at that point with the pipe that he had laid prior to it and couldn't see that he had improved the method a bit. This pipe was tested on the ground, those fifty joints, in a smooth meadow. On the 30th of September, when Forman went down to Deep river, and at all times thereafter until I went away, I insisted to him that the Crane Company was bound to guarantee us a tight line and he took the position that the Crane Company was only a broker. This divergence of views became manifest within a short time after the contract was signed. The position Forman took was that they were the broker and not the seller of the pipe, and I insisted that he should take some measures to bring to us the quality of iron that we had contracted for. He insisted that it was my duty to make personal application to the mills. I did not insist that it was his duty to make a tight line; I insisted on their furnishing us with

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material that would make us a tight line. There was a mile of pipe for the completion of the line purchased from the Pennsylvania Tube Works. The rest of the new pipe was brought from the American Tube and Iron Company, and the National Tube Works, very little from the National. The amount of pipe coming to us from the Crane Company, after deducting the amount delivered to the Consumers' Company, was 234 miles. The amount delivered by the Crane Company at the railroad stations was 95.14 miles, leaving a deficiency of 138.36 miles. To  
267 make this good we purchased of the National Tube Company, in 1891, 9.94 miles, at 88½ cents per foot; of the American Tube and Iron Company, in 1891, 42.50 miles, at 90 cents per foot, and of the American Tube and Iron Company, in 1892, 86.42 miles, at 81 cents per foot, making 138.86 miles. And in addition, a special mile of pipe that we bought of the National, and a small amount of iron bought of the Pennsylvania. I believe this statement to be substantially correct. Our contract with the Indiana Company fixed the time of completing the line as the 1st of January, 1891. Of all the Crane pipe, exclusive of the collars, with the exception of what was cut off at different threading mills, there was about 2,000 feet of pipe were rejected; and that, if the collars and threading had been correct, would have been no reasonable cause for complaint. I think I testified at the former trial if the collars were heavy enough that in my opinion the supposed defects in the taper would produce the leakage, and that had the taper of the thread been in accordance with the specifications that the supposed insufficient weight of the collar would not have produced the leakage, assuming that the taper and thread had been in accordance with the specifications; I testified at more length on that subject, which I might wish to refer to, to explain what I meant. I also testified that the whole business of preparing and laying this pipe with good pipe was about as delicate as laying a rail fence. The conversation I had with Mr. Gilbert in 1891, telling him about the experiments and tests that I had made, and the results of them, was after the 23d of May, 1891, and several weeks prior to August 27th of that year. I did not, at any time prior to the commencement of this suit, communicate to the Crane Company the results of tests and experiments made in the year 1891. It requires less pressure to collapse an eight-inch wrought iron pipe from the outside than to burst it from the inside. One of the distinguishing characteristics of the Hequembourg collar is the taper. The Hequem-  
268 bourg collar has two distinguishing features, the dove-tailed recess, the usual weight, and more. I never saw a heavier

collar than the collars that I have made. My judgment is that those collars are about ten pounds heavier than the heaviest other collars made in the mills and used in making gas lines. My collars originally weighed forty-nine pounds. I think there were 100 of those collars put down. The others weighed less. There was one-eighth of an inch taken off the collar finally, as adopted. From my personal knowledge I do not know any system of water mains where they use threaded pipe and have used lead calking. In this line, in which there were 100 joints put, there were quite a number of joints calked. In one line of 1,000 feet, there were seventeen calked, and in another of 1,000 feet there were nine calked. These 100 joints were put in two different lines, laid side by side. The joints leaked before they were calked. They leaked because there was not perfect conformity between the taper of the thread on the pipe and in the collar. There might have been an imperfect thread. I can't tell the lack of conformity that is sufficient to make a leak. I did not take any apart; it leaked, that was sufficient for me. I watched these lines after they were calked, for three or four months; on one line 600 pounds, and on the other 700 pounds; pipe exposed to atmospheric conditions. The lead possesses elasticity to a certain extent. I should say the wrought iron would expand quicker than lead under certain conditions. As a matter of practice I have watched the matter of expansion and contraction of joints in the section of pipe now in the court room, under a temperature below freezing and up to steam heat, and no change in the integrity occurred at all. Some of these joints leaked before I put in the lead calking. The line of 100 joints was an experiment to see whether the lines would do. I did not try further experiments, but began construction practically. The next line 269 that I observed for leaks with my new collar was a line of nine miles; a double line four and one-half miles in length. In walking over the line having pressure on it, having a man with a soap pail and brush, I could count the leaks. If I passed a joint that had no leaks, why, that was two joints. If I passed a joint that had a leak on the mill side or on the field side, that was noted, so that when I came to a hundred, if I passed fifty joints, the percentage of leaks I found was the percentage of leaks on that pipe. Fifty per cent of the first hundred with my new collars that I walked along leaked; about twenty-five per cent of the second hundred with my new collars, according to my best recollection; and about five per cent of the third hundred. I was not giving you the hundreds in succession as we took them. I did not so understand your question. I give you

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this explanation because of my answers. My answers are in relation to different kinds of pipe that I had under consideration. We walked along each line with the leaks I have described. I didn't walk continuously, nor didn't give you my answers as they took place consecutively. About fifty per cent of the first hundred joints that I walked along leaked, and about twenty-five per cent of the second hundred to the twenty-fifth hundred, inclusive, leaked. The leaks would be about evenly distributed along the line. We found one source of leakage, a defective pipe; gas appeared to permeate, the pipe seemed to be blistered. Another piece of pipe with a patch in it gave way under pressure. There were two or three other joints of pipe taken out of this nine mile string. We took up one or two of the collars and found that none of them had uniform taper. They were my big collars. Not one of the nine miles of them had a uniform taper. Corrected the trouble by calking the joints. Seventy-five per cent of them were tight. In my opinion they did not leak in spite of not having proper taper, because iron, under similar conditions of strain, acts in a different way, and the threading in the pipe and in the collar at the joints that failed to leak was undoubtedly sharper and cleaner cut. We took up five or six collars and the pipe connected with it that didn't leak. Found the threads on the collar and pipe perfect for the distance we could see, as far as the taper went. There wasn't full taper on these collars. There was the same defects, so far as taper went, in the collar that leaked as in the collar that didn't, but there was a difference in the quality of the threads. I didn't say I took up a good collar. We took up some collars, one side of which didn't leak, and discovered that the threads in the side that didn't leak were more perfect than in the side of the same collar that did leak. Observed the leaky joints in that nine mile length, calked with lead, some for over a year and some for several months. There was no leakage in this line of nine miles for a year and a half; that is to say, not in excess of two per cent of the contents of the pipe in twenty-four hours; no loss of air. In the fall I made a count of leaks over about seventeen miles. This was a double line. There was a continuous length of pipe that was under water, about two miles. Of the first 100 joints under water, about five per cent leaked. Of the two miles under water, there was an average of five joints to the hundred. The whole line was started for business about the 15th or 14th of November, 1892. There has not been much calking done since along this line, as I have been advised. I have personally kept no track of it. If there was a little sand in the thread, if it was strong enough



to maintain its integrity, the air would circulate through it. Find no statement in any text book that in a pipe line where pressure of 300 or 400 pounds is used and it leaks, lead is good to calk the leaky joint. These lines on exhibition were not subject to climatic influences proportionately with one twenty miles long. The effect of temperature for that distance would be nothing, but if you put them in a mile and have it caught at

both ends by its own weight, or caught physically by some  
271 condition, you would find that you had to have a pretty good joint, at least two inches of thread, to hold it together. If you didn't it would pull right apart. I have heard of instances from my brother where pipe pulled apart, and I concluded it was due to atmospheric influences or temperature change. There is a difference between a test line and a line in actual operation besides atmospheric influences, strains incident to the line itself. An experimental test is not worthless and an experiment conducted with a small amount of pipe and collars will test the goodness or badness of the collars. I would say that leaks would develop with natural gas that would not be shown with air. (The witness having examined in the court room the couplings marked "K," and referred to in the deposition of Kaufman, and the testimony of Tarrant, testifies that in his judgment they would be likely to leak if cleaned, oiled and screwed on to pipe, but that some of them might not, though he was of opinion that all the joints thus made would be likely to leak if tested by air at high pressure.)

Thereupon counsel for the defendant proposed to take the couplings referred to by the witness and screw them up with pipe, to be furnished by the defendant, and make a tight line.

I brought three experimental lines of pipe into court. In my direct examination I did not tell the jury anything about the experiments that we made with the middle line that lays here in court. I was not asked about it. I think I know the reason I was not asked about it. This exhibit was taken apart, and when taken apart the pipe was rolled up into the collar by hand, so that looking right down straight you could not see the thread. It depends a good deal on the kinds of experiments you are trying to make whether it is a fair experiment to take a collar and a piece of pipe for the purpose of experimenting, when the collar will slip clear to the very last thread of the pipe without  
272 out any actual contact. As to the north exhibit in the court room, I did not state to examining counsel that all in the world there was in that test was to show that the pipe was out of round. That was not one of the main purposes of it. I think



I have seen eight-inch pipe or collar that was perfectly round. The experiment shows that there is one joint there that is not round. I did not state to examining counsel, and it is not true that the process of manufacturing this large pipe is such that they cannot make it round. I think the Crane pipe and collars are less round than they commonly are when they come from the mills. When pressure was applied on this line at Tarrant's shop at the test at which representatives of both parties were present, the collar expanded on one diameter and contracted under the other. The tendency of internal pressure is to make the pipe round. Expansion begins before it becomes perfectly round. It begins theoretically the minute the first ounce of pressure is put on. If the pipe is thinner than the collar, the pipe under the same pressure will expand more than the collar. It was a matter requiring some judgment to tell when to stop screwing pipe together. It requires as much judgment as any part of the work. I never saw the engine stuck in screwing up the pipe, and have seen the engine screw miles of it together. The man at the end of the joint gave directions when to stop. He usually had a small hammer. When the pipe is out of rounds and kicks, as the pipe men call it, in screwing it up, sometimes they tap the collar more or less gently with a four-pound hammer until the pipe gets up. If a joint is made that holds there must be contraction in the pipe and expansion in the collar so each conforms to the other. I think there were joints thrown out of the Greentown line for defects of threading. Where there was any great defect it was thrown out. There was no attempt to make a defective line 273 at all. I have had various lines that I was connected with tested at a much higher pressure than I expected to operate them with, as a factor of safety. When the line was finished, there were more than twenty wells down at Greentown. There are pumps used in this line for the purpose of sending gas forward toward Chicago, and they are located at a place near Greentown, Indiana, at the head of the main line.

Thereupon the counsel for the defendant asked the witness this question:

"Q. And no additional pressure is furnished except the natural pressure of the gas?"

(To which question plaintiff, by its counsel, then and there objected, stating that if this evidence was offered for the purpose of showing that the operating company was maintaining an artificial pressure, contrary to the statutes of Indiana, it was objected to without reference

to relevancy or materiality upon the ground that the statute of Indiana, particularly that portion of it claiming to forbid artificial pressure, was contrary to the constitution of the United States. Thereupon the counsel for the defendant stated that the only purpose of the question was as preliminary to some cross-examination upon the testimony brought out from the direct examination of the witness as to the liability of bursting if an accident happened to the valves. Thereupon the court ruled that the testimony would be received for that purpose alone.)

The pump force adds to the well force; increases the force of the well. Gas is sent through the line by pressure maintained by the pumps, but I don't know how many there are or at what pressure they send the gas through the line. When I was down there the line pressure that we maintained for a working pressure was about 300 pounds. There are several valves in the 274 line; the first valve directly at the pump in each pipe leading to the main line. These are check valves; then there is again a system of check valves in both lines and there are other valves that control the inlet into the main lines, Ludlow gates. There are also valves at the by-pass at Logansport, at Winamac, at Coutts, at Ainsworth and at 106th street. These valves are about twenty or twenty-two miles apart. Have known of some accidental dropping of these valves. Never knew but one instance of that kind in the operation of the line and there the hood of the valve blew off and the line stopped up.

#### Re-direct Examination.

The flow of gas is sometimes obstructed in the pipe line in cold weather by the formation of cones of frost, which sometimes completely obstruct the passage of the gas. What I meant by my answer that laying a line of pipe was about as delicate an operation as laying a rail fence, was that it was a continuous operation. When you have laid one pipe with proper care you have to lay another one. It is the same way laying a rail fence, lay one, then continue up with proper care until the fence is completed.

#### Re-cross Examination.

I do not think there is much difference in regard to requirements of skill in the laying of a gas line or the laying of a rail fence.

275 WILLIAM H. TARRANT, a witness called on behalf of the plaintiff, testified as follows:

I am a machinist in Robert Tarrant's machine shop, in this city, and have been a machinist for twenty years. Am familiar with the general subject of taper. Five-eighths of an inch to the foot is standard taper. Am superintendent of this shop. (Witness then states that the couplings known as the Kaufman couplings, being those identified by the deposition of the witness Kaufman, contained various defects in taper, which he specifically enumerated, giving the weights of each coupling, which varied from 20½ to 24½ pounds.)

Cross-Examination.

Never made any line pipe or couplings, or had to do with laying them. Prior to the time when we began to do work for the Columbus Construction Company, for the past three or four years we did not have any work relating to eight-inch gas line pipe. Never have had anything to do with the making of tapered threads on pipe, but have cut a good many tapered threads for well boring tools. Never, prior to the last trial of this case, made any examination of the threads in a coupling or a pipe for the purpose of ascertaining whether the taper was or was not standard. The matter was called to my attention by persons connected with the Columbus Construction Company. The statement I made about five-eighths being standard taper is derived only from experience with fittings, not with line pipe of any sort. If the taper for line pipe had been different from that I would have heard of it. The instrument with which I measured these collars for taper I made at the suggestion of Mr.

Hequembourg. It is a beveled square. I will not say that  
276 I ever heard of such a tool for measuring the slant in couplings before, but we have made tools for doing the same kind of work before. Mr. Hequembourg staid here when I was measuring these couplings; I measured them; he put down the notes and I copied them. We went over the couplings one at a time, and I think we repeated the measurements of that coupling, and then we took a second and referred to the measurements of that and found that it was all right.

FREDERICK K. WING, a witness called on behalf of the plaintiff, testified as follows:

I live in Buffalo, New York, and am a civil engineer. Have been for ten or eleven years. Am a graduate of Cornell University. Have some familiarity with mechanical questions, air and gas pressure and expansion of metals. Conducted some experiments on some pipe with collars on it, which is now standing in the court room with some calipers on it. I understand the use of those calipers and the methods in which they can be employed for testing the expansion of a tube of iron. I conducted those experiments at Tarrant's shop, in this city, using water for putting the pressure on the pipe. Saw the pressure applied to this section of pipe about 500 times. Caliper was applied on all of the four joints and the pipe on two diameters. The result of my experiments was that the pipe and the collars all showed expansion.

Witness here gives the details of such expansion as shown by his experiments.

I measured the expansion on each collar and on each joint of pipe. If these expansions existed in a coupler placed upon a piece of eight-inch line pipe, and the pipe did not expand to the same extent, they would be material. Air has greater specific gravity than natural gas, and natural gas will find its way out of a small leak more readily than air. Expansion such as I  
277 found upon these experiments developed in collars like those in an eight-inch gas line would decrease the capacity of the line for holding gas. Such expansions are material to the extent of permitting the escape of natural gas at a high pressure. It, owing to defective taper or lack of proper threading, or any other defect, there is want of perfect thread contact or close union of iron so that there is a small leak between collar and pipe through which gas at a high pressure can escape, the pressure upon the interior of the pipe would not tend to expand the pipe as much as it would tend to expand the collar, because even if the leak be a small one, the same pressure is on both sides of the pipe, both inside and out; that is a principle of mechanics. The pressure of one atmosphere is about 14.7 pounds to the square inch. The effect of sudden pressure applied without shock like the falling of a body having weight is twice the effect of the weight of the body, and this applies to a sudden impact of gas or any similar fluid, double the strain as if applied gradually. I also tested the joint with the heavy collars that is now in the court

room, and there was no leakage. Under the same pressure a heavier collar will not expand so much as a lighter one. The expansion is inversely in about the proportion of the thickness.

#### Cross-Examination.

I became acquainted first with Mr. Hequembourg in 1889. Am out here at his solicitation. Came here expressly to make some tests and to testify. The idea that wrought iron will expand is not original either with Hequembourg or with me. I never knew of any other method of ascertaining circumferential expansion than this one. I have faith in the measurements I took.

There are as many different axes to a collar as you can imagine lines running through it. You could get 1,000 easy enough on an eight inch pipe. The plan of determining expansion was new, and it was communicated to me first by Hequembourg. I made applications with my calipers at the ends of the two axes that were at right angles with each other on the couplings. Some of the couplings that I experimented on were not round. If the calipers are put on the ends of the long axis of a pipe that is not round and then pressure is put on the pipe that axis would be contracted and not expanded. The elastic limit in iron is about 30,000 pounds to the square inch.

Thereupon the plaintiff offered and read the deposition of W. L. KAUFMAN, in substance as follows:

I live at Youngstown, Ohio. Am local manager of the Youngstown mills of the American Tube & Iron Company at that place. Have been connected with the company there since 1886. I knew of the purchase by the proprietors of that mill of a lot of eight-inch gas pipe couplings from the Columbus Construction Company. They were delivered from the spring of 1892 throughout the year. I directed where they should be put when they came in. They were unloaded and stocked under cover on our main threading floor. Some had been used, and afterwards the remainder were put under cover in a building adjoining. We received about 20,000 in all. They were piled up under cover and kept dry in the possession of our company. We paid one cent per pound for these couplings free on board cars at point of shipment. On November 5, 1894, I sent fourteen of those couplings to Chicago. I directed the man in charge

of the couplings to select them. Saw them in my office after they were selected before they were crated for shipment. All were marked with the letter "K" on each style with the number in addition. There were six different styles. Each style was marked with the letter "K" and each coupling on each style was 279 marked with the same figure. That is, all the couplings of one style were marked with the figure 1 and the letter K; all of another style with the figure 2 and the letter K, etc. These letters and figures were stamped on the couplings with a steel stamp. They were boxed in my presence and shipped by express to the Columbus Construction Company, in care of the Indiana Natural Gas and Oil Company, 148 Michigan avenue, Chicago. Next saw them at Tarrant's machine shop in Chicago about December 5 or 6, 1894. I saw the box at Tarrant's machine shop at the same time and recognized the couplings by the marks that had been put on in my presence. They were also marked at Youngstown with paint. I saw and identified some of them in the court room in the Monadnock building in Chicago on December 5 or 6, 1894, when I was testifying in this case.

Thereupon the plaintiff offered and read the deposition of GEORGE L. FORMAN, which was as follows:

I reside in New York City. In 1890 was secretary of the Crane Company. Remember the contract between the Columbus Construction Company and the Crane Company in respect to pipe line. Before the final delivery of the contract in Chicago I was informed in New York that the by-laws of the Columbus Construction Company required all contracts to be approved by the majority of the stockholders in writing before delivery and that it was necessary for Mr. Yerkes to complete the contract by his signature. I was informed that this pipe was to be used to carry natural gas from some part of the State of Ohio to Chicago. Remember seeing a coupling for this pipe at the office of the plaintiff company in Chicago after the execution of the contract, and it was made by the National Tube Works Company. I remember looking at this coupling in the presence of W. S. McCrea, treasurer of the Crane Company, and Mr. Hequem-  
280 bourg. Hequembourg called my attention to the fact that he wanted a uniform coupling interchangeable one with the other. I procured a sample of their standard line pipe coupling from the National Tube Works Company. Had it sent over to

the Columbus Construction Company. I should say Hequem-  
bourg had it there for examination two or three days. I then  
called upon him and in general discussed taper and finish; by  
that I mean beveled edges or something of the sort. He ap-  
proved of the coupling. Hequembourg or I suggested that we  
procure a sufficient number of couplings like that and send them  
to the different mills with instructions as how to proceed. As  
to the weight of the coupling no instructions were given. I did  
order the couplings and each of the mills received them. Hequem-  
bourg and I discussed first the general construction of the coup-  
lings; second, the tapered joint; and third, the bevel on the edge.  
I considered Hequembourg's request an instruction all through  
my dealings. At his suggestion I purposely evaded mentioning  
weight in the letters that I sent to the different mills notifying  
them that a sample would be expressed to them. Mr. Hequem-  
bourg never in conversation with me ever realized the mills of any  
responsibility under their contracts on the couplings.

#### Cross-Examination.

I am general manager of sales for Henry Worthington. Left  
Crane Company in 1890. On the making of the contract I first  
approached Hequembourg. I was the one to suggest our buy-  
ing the pipe. Hequembourg came into our office originally for  
some special work to be done on a pipe line where they were  
going over elevations or where they had to cross streams.

Hequembourg told me he had been very successful in laying  
a gas line somewhere in the neighborhood of his home. Said he  
had had more experience and had been more successful than any  
of the others and that was the reason he had been employed in  
this instance. The only time I was down on the line with Kil-  
gore, Hequembourg stated to me that these pipe never would  
be called upon to sustain the pressure called for by the contract.  
I never heard of any complaint being made about the insufficient  
weight of the couplings down to the time that I quit the Crane  
Company. When I had this conversation with Hequembourg  
about sending letters to the mills he said that he did not wish to  
hold them down to the weight of the sample couplings, if they  
put more iron in, so much the better. The subject of uniform  
taper must have been mentioned in that conversation, because  
Hequembourg and I either orally or else penciled out in his office  
the form of letter that I sent out, and that letter referred to five-  
eighths inch taper, five-eighths inch to the foot of taper,



uniform taper The matter of taper came up in preparing a letter to the mills that the sample we sent them was so many threads to the inch and five-eighths inch taper to the foot. Hequembourg and I never used the word uniform in speaking of taper to my knowledge. We did not have written contracts with all the mills participating in the manufacture of this order. Did not have with the Pittsburg Tube Company, Spang, Chalfant & Company and the National Tube Works Company. Saw Hequembourg at the Victoria Hotel in New York, at which time I told him that two concerns which had given me verbal options for a certain number of miles of pipe had weakened by reason of the contract he wished them 282 to sign. I said to him that I had arranged with Converse of the National Tube Works to make the quantity that the others would naturally throw us in default of, giving him the dates of the deliveries. Those from the National were lighter than that originally proposed. I told him we would hire the best expert test men and station one at each of those two mills and fill the orders promptly. Hequembourg said that would not do. I then told him he ought to give me some instructions. He said he would not. I then told him I would go ahead with the contract unless he accepted one or the other. He informed me that he had no right to change the contract, but that if I would do what I suggested about the two inspectors that he would have that pipe delivered at the Chicago end of the line where the pressure would be very light, and he felt there would be no trouble about it, but he declined to alter the written terms of the contract. In nearly every conversation I had with Hequembourg the point came up that I considered the Crane Company merely brokers. We were continually wrangling over it. When Kilgore and I went down on the line we found the pipe in what you might term loops in some places; a long string of pipe connected up, part in the ditch, the remainder suspended over a piece of pipe on top of the ditch. We complained to Hequembourg and called his attention to the fact that that would necessarily strain the joints. When I left the Crane Company there was some temporarily unpleasant feeling between Mr. Crane and me.

#### Re-direct Examination.

When Hequembourg spoke about the line not being likely to 283 be subjected to 1,000 pounds to the square inch, a great deal of the pipe had been delivered and very little laid. It was necessary if the couplings were to fit pipes made by different

manufacturers that the taper must be uniform in the collar and thread. Not stating the weights was suggested by Hequembourg for the reason as before mentioned, that at no time did I write any letter to convey the idea that we had in any way relieved the mills from their contracts.

Thereupon the plaintiff offered and read the deposition of EDMUND C. CONVERSE, as follows:

I reside at New York City and am vice-president and general manager of the National Tube Works Company. The business of that company is the manufacture of wrought iron and steel tubular goods, castings and appurtenances. I never had a contract with the Crane Company for the delivery of the pipe for that company at stations in Indiana in 1890. I had a verbal arrangement. Forman was desirous of purchasing a very large quantity, about 100 or 200 miles, I don't know but what it was more than 200. I was pretty full of work at the time and did not care much for any of the business, but told him I would furnish what was necessary for him in order to make his plan a success, provided it did not run over seventy-five miles of eight inch and twenty or thirty miles of ten inch. I don't recollect giving any guarantee as to this pipe other than that we were to ship what is known to the trade as line pipe. I don't think Forman presented me with a copy of the formal contract marked "Exhibit B." I don't think such a contract was ever executed. Tests 284 made in line for pipe conveying gas are generally made with gas. I think that my company shipped a mile of eight-inch pipe to the Columbus Construction Company in the fall of 1890 on account of the contract with the Crane Company. I think that was all of the eight-inch pipe that was shipped on the contract. There was a mile of eight-inch pipe shipped to the Columbus Construction Company after the Crane Company had canceled all of their uncompleted portion of this order, some months after that. I understood Tom Galvin laid this test pipe the latter part of 1891. He had been employed in pipe laying; was supposed to be a good man. I ordered for that test a standard eight-inch line pipe. There was an informal association of pipe manufacturers met in New York City often at the Fifth Avenue Hotel. I think I recollect two letters received from the Crane Company in which some trouble was mentioned about the pipe delivered by the National Company. There was a difference in

the style of couplings furnished by us under our contract with the Columbus Construction Company and those furnished in the mile of pipe for the Crane Company.

#### Cross-Examination

Forman consulted me at the Fifth Avenue Hotel in New York about this big line of eight-inch pipe in 1890. My relations with him were very close. Forman and I came to a substantial agreement as to what would be a fair and proper price for the pipe. I think it was 88 cents. I agreed with Forman I would furnish a part of this large order. I was not consulted as to the character of the contract between the Crane Company and the Columbus Construction Company before it was signed. There was no written contract between me and the Crane Company. I told Mr. Forman I would not execute a written agreement.

#### Direct Examination, resumed.

A meeting of pipe manufacturers was held at Fifth Avenue Hotel on Thursday, June 26, 1890. Mr. Page, Mr. Forman, George Matheson, A. S. Matheson, A. N. Noymer and I were present. The last preceding meeting was held at Pittsburg on May 22d. The June meeting lasted two days. The July meeting was held July 23rd in Philadelphia. The July record indicates that Forman and I were present and Page and Matheson were not.

#### Cross-Examination, resumed.

The Crane Company furnished us shipping directions for more than one mile, slightly more, not very much. After the summer of 1890 the price of the pipe advanced in the market, and it never fails to decline in the latter part of the year. I think we did make a demand on the Crane Company for shipping instructions in January, 1891. I wanted them to take the pipe we expected to furnish. The demand was not made upon the suggestion of Forman. I have only seen one gas line tested personally. Was no difference between the test of 1,000 pounds pressure of gas or water so far as the expansion of iron or collar went, and I should think a test at the mill would be just as thorough as a test at the line with gas pressure. So far as the pipe went, I had it understood with Forman that I sold standard line pipe, that was the extent of my obligation. I think Forman mentioned something about a thousand pound test. Standard line pipe

weighs 28.18 pounds per foot, including socket, with an allowance of two and one-half per cent. on everything above six-inch pipe and five per cent. below six inch. Standard line socket for eight-inch pipe weighs 19.60 pounds. Shipment of pipe in the spring of 1890 was made in view of negotiations for our furnishing pipe for the field line. I was not on the ground, and did not see this pipe tested. The pipe that I ordered shipped out there was our ordinary standard line pipe with the ordinary standard line sockets. The Hequembourg socket was a heavier socket and longer than the other, seven inches long I think. This test line ordered by me was laid with the same class of socket that we shipped to Mr. Crane is my recollection. That line was laid under the supervision of George N. Riley on our behalf. I furnished fifty or sixty thousand feet of pipe called for by the contract of May 21, 1891, and then became involved with the Columbus Company about it. Two of the points of controversy I recollect. We claimed that some of the damages which they claimed on the threads were done in transit and that we were not responsible for them. The contract stipulated that the delivery was f. o. b. mill. Another objection that we made was that some of the inspectors were not experienced and their inspection was not correct, and that they made objections to what we called natural flaws which occurred inevitably. I think Henry Coyle is the name of the man that I had in mind at the time as being incompetent. I won't say that he was. The contract between us and the Columbus Company was canceled and we made a settlement. My company and the Crane Company are competitors in a good many lines; competition for some years has been pretty sharp. My personal relations with Mr. Crane have never been at all intimate. In business our relations could be called unfriendly, I suppose, in the light of bitter competition since the fall of 1890. There were certainly some very sharp communications between Crane and myself, red-hot, about January, 1891

#### Re-direct Examination.

There is a material difference between the hydrostatic pump test of a thousand pounds and a thousand pounds of gas in the line so far as leakage goes. I don't know Coyle, and don't know whether he is competent or incompetent.

#### Re-cross Examination

Leakage in line might be produced by careless handling, cross-threading or anything like that.

Thereupon the plaintiff offered and read the deposition of A. S. MATHESON, which is as follows:

I reside at Middletown, Pennsylvania, and am a manufacturer of wrought iron pipe and tubing. Am connected with the American Tube and Iron Company. We bought about 20,000 standard couplings from the Columbus Construction Company in 1891. Part were delivered to our Youngstown mills and part to the Middletown mills. I examined these couplings, some of 288 them, from time to time. The thread was very irregular and the weight and the outside diameter of the coupling varied considerably. Some of them were fairly well tapered and some of them only slightly so. They were standard pitch of thread, eight to the inch. We were obliged in many cases to retap them. In other cases ran a tap through them and cleaned them up and put them in shape so that we could use them. I should have regarded these couplings as very unsafe on a line of gas pipe on account of their lack of uniformity of size and in so far as they were not all full taper. We got rid of quite a number of these couplings on our regular merchant pipe by putting them in proper shape for it. We may have one or two thousand left. I directed our local manager at Youngstown to pick out three or four of each make of couplings as we had them there, to examine them carefully himself, to mark them and ship them by express to the Columbus Construction Company at Chicago recently. We furnished about ninety miles of pipe to the Columbus Construction Company in 1891 and 1892 to complete the gas line which was then constructed. The pipe was standard eight inch line pipe and was furnished with the coupling known as the Hequembourg socket. This socket when furnished separate from the pipe, we furnished to the Columbus Construction Company the first lot at three dollars, and the second lot at \$2.75 each. The standard eight-inch coupling when sold separate from the pipe at that time was worth one dollar. If we were making a contract for line pipe we would not regard the difference between a 600 pound and a 1,000 test as cutting any figure in the price. If you make it tight at 600 the thickness of the pipe and perfect work in the couplings would make it tight at 289 1,000 pounds. Tests of pipe in line for conveying gas are usually made with gas. In practice we always assume that whatever the air test is to be the hydrostatic test should be dou-

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eson. ble. Before entering into a contract to furnish ninety odd miles of pipe to the Columbus Construction Company we furnished a sample lot. It was to be put together and tested upon the results of that test, if satisfactory, we were to go on with the contract. We furnished in that test line either a big car load or a mile, I am not sure which now. It was supplied with the Hequembourg coupling. We did furnish the ninety odd miles of pipe. In 1890 and 1891 I was general superintendent first and afterwards general manager of the American Tube and Iron Company; can't tell exactly when I began as general manager; I think in January, 1892. Our contract for the purchase of the 20,000 couplings from the Columbus Company was made at the same time we were making the contract to furnish that company pipe. Because we were dealing largely with these people we accommodated them by taking these couplings. Mr. Hequembourg conducted the negotiations on behalf of the Columbus Company. Hequembourg said they could not use them because they would not make a tight joint and said that they were not heavy enough and that they were not tapered couplings. In my first dealing with him he stated that the couplings were not properly tapered and that that was one reason why he couldn't use them. He said something about the couplings expanding under pressure. I examined over a hundred of those couplings at different times with respect to taper and thread. I examined ten or a dozen of each make as to determine the character of the couplings and 290 decide what to do with them. As I understood, there were about five mills that made the pipe. Our master mechanic, who has charge of the coupling department, would bring those couplings to me when he had occasion to use couplings in the work. Can't tell what defect I found in the Reading Company's couplings; the National was rather the better of all, but it was not full taper, nor was Morris Tasker's; I think Spang, Chalfant's was the only coupling that was full taper; in the Pittsburg tube the defect was in the size of the thread. I regarded these variations in thread and size and taper of the couplings as serious considered with reference to making a tight line and sufficient to account for a great deal of leakage when the line was put together. Can detect variation of taper with my eye. We make our taper by means of a master tap. Have a steel gauge with a sort of master tap on it. It is a tooth gauge. Our couplings are tapped, tapered right at the start, and we can't get away from that. Every coupling is screwed on a steel gauge to see that it is the right size. The couplings that we brought from the Columbus Company I inspected with the eye, tried them occasionally.



I don't know whether some of those couplings that I examined have been screwed up in line; didn't pay any attention to that part of it. Only know as to the variations in the outside diameter of the couplings by what our master mechanic and local manager at Youngstown stated. The only defects in these couplings which I can swear to from personal inspection, the only defect is in taper; that I ascertained by the eye and putting a steel scale on, probably put the scale on half of them. I understood that 291 these couplings that I had brought were rejected; knew that the Columbus Company and the Crane Company were in controversy. Hequembourg did not say anything to me in the way of asking me to look out for defects in these old couplings when they were sold to me. There was no suggestion made by Hequembourg as to the importance of finding out what their condition was until within the past month. None of these couplings have been used in line work, only on very ordinary lines where the pressure was light or on an oil line where a coupling need not be quite so fine as for natural gas. We have considerable complaint after we send them out on both gas and oil lines. I used some of them on low pressure gas lines where we thought we would be safe in using them, but we have always had a good deal of trouble with them, very serious complaint. My father don't know anything about the use of these couplings in line work in the absence of complaint. He has not been actively engaged in the work, except in consultation with me from time to time. These defects that I have mentioned were such that if means were taken out of the ordinary in the use of line pipe—in the use of pipe as line pipe—they could be detected by careful and competent inspection before the pipe and couplings were laid in line. The size of the thread in these couplings varied between one maker and another, the pitch of the thread of course was eight to the inch. That was correct in all of them. I told my manager at Youngstown to pick out three or four of each make and send them to Chicago, to take them at random from each make as he could find them without regard to selection; not the worst nor the best, but the average of them as he found them. He got no other instructions on the subject except mine. I told him to examine those he sent to Chicago thoroughly throughout in every way. I never have seen any gas lines tested in the line. I would say that 1,000 pounds pressure of water would expand pipe just as readily as 1,000 pounds pressure of gas. I would rather sell pipe on 1,000 pound water test than upon a thousand pound gas test. I think 1,000 pounds of gas will strain a pipe and make 292 it more likely to expand than 1,000 pounds of water. It is

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generally supposed that an air test or gas test would be more severe than a water test. I think a pipe would be as likely to expand under a pressure of 500 pounds to the square inch of air or gas as it would under 1,000 pounds of water. We deal with the Crane Company in a small way and have since 1890, and are to some extent competitors. Forman consulted with me before he made this contract with the Columbus Company. I undertook to make about fifteen miles of this pipe under the condition that he would let me know in three or four days, which he promised to do. He did not let me know for a month, and in that time I had filled our mill with an oil line and was not able to undertake the work. If I were to sell standard line pipe with standard line couplings, it would not make any difference in the price of the pipe whether it was guaranteed at 600 pounds or 1,000.

#### Re-direct Examination.

I find now on further reflection that I was mistaken in saying I became general manager in 1892; it was in 1890 or 1891. I do not think the defects as to taper and threading which I discovered in these couplings could have been occasioned by screwing the pipe together in the field. Thread per inch of screw is called the pitch.

#### Re-cross Examination.

The weight of our regular standard couplings runs about twenty-eight to thirty pounds. I don't know that there is a standard table of weights for sockets and that in that table the eight inch sockets in 1890 or 1891 were given at 19.60 pounds. I don't know what weight other manufacturers make. Each manufacturer adopts his own weight.

Thereupon the plaintiff offered and reads the deposition of EDWARD BEERS, which was as follows:

I reside at 143 West 43d street, New York City, and am a stenographer, and was employed in that capacity by the Chicago Gas Company and the Columbus Construction Company in June, 1890. I took the dictation of Exhibit B, attached to the contract between the Columbus Construction Company and the Crane Company from Mr. Hequembourg. Mr. Forman, Mr. Hequembourg and Mr. Avery, Mr. Hequembourg's partner, were present at the time it was done. I made six copies at least. I delivered them

on Monday morning to Mr. Hequembourg, and he handed them to Mr. Forman. Forman said he was going to take them to the mills, and was in great hurry to catch the train. This dictation was taken on June 29, 1890, on a Sunday.

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### Cross-Examination.

I took the whole contract at the time. Do not think I took Exhibit A, being a letter addressed to Hequembourg and signed by Forman. Hequembourg dictated the contract as well as Exhibit B. I made copies of Exhibit A, and I think the approximate estimate some time, but I don't know when. Exhibit B, so far as I know, was the only thing delivered to Forman. Hequembourg read from another paper in dictating and partly made it up as he went along. There were discussions between him and Forman about it as they went along.

Thereupon the plaintiff offered and read the disposition of GEORGE N. RILEY, which was as follows:

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I live at Braddock, Pennsylvania, and am a mechanical engineer, and am connected with the National Tube Works Company. Have been in its employ since 1875. Now inspect 294 and look after boiler tubes. In 1891 I was connected with the sales department of the company. Know Hequembourg. I remember the laying of a mile of pipe on the line of the Indiana Natural Gas Company's right of way near Ainsworth, in the State of Indiana. I am not sure as to the year. I went there for the purpose of laying the line and was taken sick and laid up at a farm house. Saw the line lain, but did not see the test made. Went there at the instance of the National Tube Works Company. The pipe was regular eight-inch line pipe manufactured by that company. The regular line pipe couplings were used. A contractor named Galvin laid the pipe. Took men for that purpose. I have had considerable experience in laying and testing pipe in line for conveying gas. I saw the pipe laid. It was laid in the usual way; first strung along the ditch and screwed together with tongs and proper tools until it was judged to be tight enough to hold the pressure calculated. It was then lowered in the ditch and prepared for testing. We intended to test it up to a thousand pounds. Quinn and Galvin made the test under my directions. The object of laying that line of pipe was for experimental purposes, to ascertain how the pipe would act under 1,000 pounds of air, how the joints would be. Gas is generally used in making

Riley. the water test for a line for conveying gas. I looked at this pipe after it arrived at Ainsworth. It looked to be up to the standard of our regular line pipe.

#### Cross-Examination.

There was half a mile of the pipe laid. Leakage is not common in natural gas lines. When they first introduced gas it was until they found the proper pipe for that purpose and the proper way of laying it. Now the natural gas lines in this vicinity and in the fields of Pennsylvania are practically tight. In 1890 and '91 they leaked some. In 1884 or from 1884 to 1886 they leaked so that escape pipes were provided for burning the waste gas. That was not true as late as 1890 in the fields, though it was in the streets. I saw a great many lines tight in which we couldn't discover a leak. We have had them so tight they couldn't discover any loss of pressure. Had such a line in the Murraysville field under a pressure of 200 pounds. I have known several other lines. It was customary in 1890 and '91 to figure a certain amount of loss for friction, not for leakage. I never figured any for leakage. For leakage that worked off and burnt in an escape pipe no allowance was made. There must have been a small loss of pressure from that source where they used cast iron, not where they used wrought iron. Loss never amounted to anything. The highest pressure I have seen pipe tested with gas in the field is 375 pounds. The well pressure is greater than line pressure in Pennsylvania. Don't know what the weight of a standard line coupling is, but we have a catalogue list which shows. Know Henry Coyle. He was representing the Columbus Company in the laying of this pipe that I testified about. He looked it over. I remember a man named Darling inspecting pipe at Winnemac. He condemned some pipe there that I thought ought to have been passed. The weight of the coupling, according to our list, can't tell what year, was 19.60. This half mile that was laid was laid, as I judge, with our regular standard line couplings, though I don't know whether they were or not.

#### Re-direct Examination.

There was no fault found in the laying of the pipe. I did not discover any defects in laying it as to the manner in which the collars already placed on the blanks fitted.

296 Thereupon the plaintiff offered and read the deposition of  
WILLIAM MILLER STEWART, which was as follows:

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I am working at McKeesport and am order clerk for the National Tube Works Company and have been for three and a half years. I gave an order for the shipment of a mile of eight-inch standard line pipe to the Crane Company at Sedley, Indiana, in 1890. The pipe that was furnished was about a mile of the National Tube Works Company's standard eight-inch pipe got out in the usual manner, with an order to test each piece to 1,000 pounds hydraulic pressure. Gave an order for the shipment of a mile of pipe in the spring of 1891 for the Columbus Construction Company at Ainsworth, Indiana. The pipe was essentially the same material got out under the same instructions as to the inspection. The material used in this second mile of pipe was iron made to the same specifications as the first lot as regards the thickness and weight of the material; subjected to the same inspection and test. There were no specifications or instructions on the face of the order I got beyond the fact that it was to be a mile of our standard eight-inch line pipe, tested to 1,000 pounds hydraulic pressure.

#### Cross-Examination.

I did not inspect nor critically examine any of this pipe while it was in process of manufacture, nor of the couplings. My observation of the manufacture was simply a casual observation as I would be passing along the threading floor, and I do not know from any examination in the manner suggested whether the last mile of pipe that was shipped to Ainsworth was like the other mile of pipe or not. I inferred it was alike because the materials used were made from the same specifications as regards the weight of the plate, the weight of the iron, the finished  
297 weight of the pipe and the hydraulic test. I didn't personally weigh any of the plates and do not know of my own personal knowledge whether a single one of the specifications was complied with in the manufacture.

#### Re-direct Examination.

Our custom is not to weigh every piece of pipe unless a request be made by the purchaser. Our practice is to make a test of the production four or five or a dozen times a day and take the av-

erage unless otherwise specified, and to mark every piece of pipe with the stencil of the company and also a stencil showing the test.

#### Re-cross Examination.

It is the practice of this mill on every thread that is cut to test it before applying the coupling by the use of a master gauge. We don't test our dies or taps except at intervals, but we use the gauge on every thread before the coupling is applied.

Thereupon the plaintiff offered the deposition of JAMES CAMPBELL, duly taken in this cause, to the reading of which deposition the defendant, by its counsel then and there objected upon the ground that this deposition referred, so far as material, only to the manufacture and testing of the so-called 'test mile of pipe; the testimony of William Quinn as to the laying and testing of which had been already, upon motion of the defendant, excluded by the court on the ground that it related to matters collateral to the issue on trials in this cause and was not material herein; and upon an inspection of the said deposition by the court the objection of the defendant to the reading thereof was accordingly sustained by the court, to which ruling of the court the plaintiff, by its counsel, then and there duly excepted. The deposition of said James C. Campbell thus excluded by the court is as follows:

Q. What is your name? A. James Campbell.

Q. Where do you live? A. McKeesport.

Q. What is your business? A. I am foreman of the finishing department of the National Tube Works Company, pipe finisher.

Q. How long have you been in that business? A. I have been in it twenty-three years.

Q. How long have you been in the employ of the National Tube Works Company? A. Twenty-three years.

Q. I will ask you if you were in the employ of that company at their works at McKeesport, in the spring of 1891? A. Yes, sir.

Q. What are your duties as foreman of the finishing department? A. To see that the pipe are properly straightened and proper threads put on, properly tested, orders got out and ready for shipment

Q. I will ask you to remember an order of a mile of eight-inch standard line pipe, shipped by the National Tube Works Company, in the spring of 1891, to the Columbus Construction

Company at Ainsworth, Indiana? A. I remember something about it, yes, sir. Dep  
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Q. What did you have to do with the shipment of that line pipe? A. I had to see that the pipe was properly tested and threaded and weighed and made ready for shipment.

Q. What inspection of it did you make in those particulars? A. Why, the pipe was straightened by straighteners; I seen that it was straight, and threads cut on it by machine hands, and see that the threads were in good order, proper size, and then see that they were tested and the instructions from the office 299 carried out in regard to pressure and so forth.

Q. What do you know about the testing of that order of pipe? A. I didn't know any more about it than I received orders to test it to a thousand pounds pressure.

Q. You may state whether or not you did test it to that pressure? A. Yes, to the best of my knowledge and belief it was all tested to a thousand pounds.

Q. What was the custom of the mill of ascertaining the weight of pipe? A. They put it on a pair of scales and weigh it.

Q. How much of it is weighed? A. Only what is ordered to be weighed.

Q. I wanted to know in regard to that, the fact whether the pipe is weighed? A. If the orders are so given to us we weigh them.

Q. Do you remember whether or not that pipe was weighed? A. Yes, I believe that pipe was weighed.

Q. What further did you have to do with the shipping of it? A. Nothing further than to see it on the platform, and see that it was put on the platform for shipment.

Q. Before it was put on the platform, what mark or indications are put on the pipe, if any, to show that it has been properly inspected and weighed? A. Well, we generally stencil it, National Tube Works Company, McKeesport, line pipe tested 1,000 pounds, or tested 750 pounds, or whatever the specifications called for.

Q. I will ask you whether or not the pipe is ever put up on the platform for shipment without being so marked? A. No, sir, never.

*Cross-Examination.*

Q. Do you know in reference to this order you have testified about, whether special orders were given, that every length should be weighed? A. I think there was orders to that effect.

300 Q. In the absence of such orders you would only weigh sample lengths taken at random, would you? A. I would only weigh sample lengths.

Q. You dont remember absolutely whether you did weigh every length of this or not? A. I am pretty certain that we did.

301 Thereupon the plaintiff offered the deposition of JOHN PERRON, duly taken in this cause.

(To the reading of which the defendant, by its counsel, objected upon the same ground urged against the admissibility of the deposition of James Campbell and stated above. Thereupon the Court sustained the objection of the defendant to the reading of this deposition; to which ruling of the Court the plaintiff, by its counsel, then and there duly excepted.)

The deposition of said John Perron thus excluded by the Court under the objection of the defendant is as follows:

Q. What is your name? A. John Perron.

Q. Where do you live? A. McKeesport.

Q. What is your business? A. Testing pipe.

Q. Where? A. Here, for the company.

Q. In what works—for what company? A. For the National Company.

Q. How long have you been in the employ of the National Company? A. About nine or ten years.

Q. Were you inspecting pipe for that company in the spring of 1891? A. Yes, sir.

Q. I will ask you if you remember an order of pipe that was shipped by that company to the Columbus Construction Company at Ainsworth, Indiana? A. Yes, I guess I did.

Q. What did you have to do, if anything, with the inspection of that pipe; did you help inspect it? A. Yes, sir.

Q. What did you do? A. Inspecting and testing.

Q. How did you test it? A. Test them in a pump and getting it together.

302 Q. Do you know anything about the weighing of it? A. No, I don't remember about that.

Q. You had nothing to do with the weighing of pipe? A. No.

Q. Do you remember what pressure you applied to that pipe? A. I think about a thousand pounds.

Cross-examination waived.



Thereupon the plaintiff offered the deposition of one JOSEPH W. D. CRAIG, and read the same in evidence as follows:

I live at Sewickley, Alleghany County, Pennsylvania. Am in the oil and gas business, and have been from fifteen to eighteen years. I am president and vice-president of three or four companies in this section of the state engaged in the supply of natural gas for heat and light. Am director in other companies. I do not think the test of line pipe in the mills is relied upon as determining tightness of the lines. I think a line calculated to carry gas should be tested in line to double its working pressure. If a gas line proved tight at a pressure of six or seven hundred pounds I think it would prove tight at a thousand with few exceptions, possibly none. Any strain on iron-calked joint opens the calking and results in leaks. There is great danger in conducting natural gas through a leaky line. In the early history of the gas business carried on in Pittsburgh they made provision for leaks at the joints, covering each joint with broken stone, covering that with tar paper or possibly a board, and then carrying an escape pipe to the curb. It terminated in a pipe seven or eight or nine feet high. The gas was frequently burned at the top of the escape pipe. A joint repaired with flanges involves a straining of other joints.

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*Cross-Examination.*

Went into the business of producing oil and gas in 1885. The only instance in which I was personally present when an eight-inch line of pipe was laid in the ground where I was connected with it was in Alleghany county in 1889. Watched the operation possibly an hour. I was president of the company that was having the line laid. I think there was less than a mile of eight-inch screw pipe in the line. I don't know whether this pipe had any taper or not. Atmospheric strain tends to strain joints of pipe; undoubtedly a line laid in a deep ditch would be in better shape than one laid on top of the ground, because there the sun could not get at it much. A line laid and exposed to the rays of the sun a mile or so long would jump to one side a number of feet, and that would wrench the line. If in the ditch, that would not occur. Plumbago and oil make a very good lubricant. Our men are lately using asphaltum. Sand in the joints of pipe when it is screwed up might break the threads and make a bad joint and a leak. A four-inch line laid for a company in which I was interested leaked a good deal. We notified the company that fur-

Craig. nished the pipe and they sent men out to calk the line. That was a year ago. Our superintendent says now that he had a good line. The line is in actual operation to-day. Pipe shouldn't be broken in the handling, for all mills put on a thread protector, which covers up the end which has not the mill connection on, so that there is no way, with the protectors on, that, if the pipe was properly handled, the thread could be broken. I don't know anything about the rule of the mills as to the question how much stronger pipe ought to be than just strong enough to carry the pressure intended to be put on it. I heard of this suit three or four years ago. Mr. Hunt and Mr. Hequembourg recently came to see me in Pittsburg about testifying. I think 3,500 feet of eight-inch pipe is an average day's work in laying pipe. I should think 304 about eighteen men would be necessary to lay this in a day. I can't state with satisfactory accuracy the number of feet of eight-inch pipe that a gang of men ought to lay in a day. I have seen pipe affected by heat jump up so that there was a little space between the ground and it. Say thirty inches. That would wrench it terribly.

Thereupon the plaintiff offered and read the deposition of R. S. DUFFIELD, which was as follows:

I live in Pittsburg, Pennsylvania, and am superintendent of the Peoples' Natural Gas Company. Have been connected with that company ten years and in the natural gas business thirteen years. Was engaged in the oil line business six or seven years. My special department is drilling wells and laying gas mains. Am familiar with eight-inch standard pipe and have laid it for the conveyance of natural gas. In order to get a tight line for the conveyance of gas and a permanent and secure line it is necessary to have a perfect pipe with a tapered thread to correspond exactly with the taper in the collar. There should be a thread from two and a half to three inches in length. If there is a defect either in thread or taper on the pipe or collar or want of uniformity of taper, the result will be that you will have an imperfect joint and the joint will leak. I would consider it impracticable to make a tight line of a line of eight-inch standard line pipe, ten per cent. of the joints of which leaked at a pressure of less than a hundred pounds of air or gas. In iron calking you can't improve your line. In my judgment you damage it. I have never found any cement which was effective in remedying defects in taper or pipe and preventing leakage of natural gas under a high pressure. Oil is put on the threads of pipe and collar in pipe laying as a lubricant. Am familiar with

the method of testing eight-inch standard line pipe at the mill. The medium employed is water. It takes from five seconds to a minute to test one joint consisting of a single  
305 length of pipe with a collar at one end. In laying eight inch standard line pipe in the field I pay no attention to the mill test. Although in such a test you might not observe the escape of water through the joint, that would not in my opinion be a sufficient indication of tightness to prevent the escape of natural gas under high pressure. In laying such I find as many leaks on the mill end as on the end that is put up in the field. In and prior to 1890 it was practicable to make a tight line with eight inch standard line pipe where there was uniformity of taper between the thread on the pipe and in the collar and  $2\frac{1}{2}$  inches of thread, eight threads to the inch, and the pipe was properly laid, to make a tight line for the conveyance of natural gas as it is now; and we can now make a tight line pipe under those conditions. We always considered it very dangerous to attempt to calk a natural gas line under a pressure of 300 pounds. There is danger connected with a gas line that is leaky. It is not practicable in my opinion to repair such a line with flange unions. The effect of placing such a union in a line of pipe already laid has no effect that I see upon other portions of the line. There is not much difference between the cost of a flange union and the cost of a collar. If anything, the union might be a little the cheapest. I would not regard a line as practicable in which any considerable number, say ten per cent. of the joints had been replaced by flange unions. Every time you make any repairs on your line you injure it.

#### *Cross-Examination.*

The People's Natural Gas Company of which I am superintendent is located at Pittsburg and supplies gas for that city. The nearest point from which gas is obtained is about ten or eleven miles, and the most remote about forty miles. We have all sizes of pipe to bring gas from the wells to the city, from two inches up to twelve. The smaller the line, the easier it is to make it tight,  
306 because it is easier to get a perfect thread on it than it is a larger one, and much easier handled without damaging the thread. I do not know why it is that it is harder to make a good thread on a big pipe than it is on a little pipe at the mills. More care is requisite in the handling of heavy eight inch pipe and laying it than in the laying of a small line. I laid an eight inch line from the Murraysville field of Allison pipe and saw that it was carefully unloaded. I required the men to go there, lift it off carefully and let it down with ropes; we put skids upon the car and run it on there and let it

down with ropes. In unloading if the ends come in contact with other pipe hard enough to injure it it would ruin the joint. There is a collar on one end of the pipe and a ring to protect the other end. We let the pipe down carefully to keep from straining it. The ring isn't very heavy, and if it comes down hard there is danger of damaging the end of the pipe, smashing it so that it wouldn't be round. We do not put anything between the joints on the wagon. In unloading from wagons I take care the same as at the car. Have men to lift the pipe off from the wagon onto the ground. In bending pipe at ravines we build a fire under it and bend it down. Pipe can be bent cold. The best way to bend it would be to put a fire under it; that is the way I always did. Never rolled pipe down a ravine. If it struck a stump rolling down, it might bend it; if it struck the thread, that would damage the thread. Cleaned the threads with a brush made out of some kind of roots. We use oil to lubricate the threads; what is called standard lubricating oil. I have used things to mix with it but not of late years. I don't think it would do any good. I think an underground line is better than a line on top of the ground. Heat and cold would not affect the pipe so much underground. I have laid pipe by hand in my experience, and have had no experience with a machine. I don't think it is any better way where you use a machine, but in this country you could not use a machine. I think it better to lay pipe when the ditch is  
307 dug than to lay it over the surface and then go back and dig the ditch. You have trouble getting the pipe into the ditch, if you lay the line on the surface and dig the ditch afterwards and some strains are occasioned by this process. Occasionally a collar put on at the mill will turn. The foreman of the gang tells the men screwing up the pipe when to stop. He generally stood right at the collar. The foreman tells the men when to stop by his eye. A good many people use a hammer. I never had much faith in it. Sometimes put my hand on a collar when pipe was being screwed to see whether there was friction there. If it was getting hot the threads were being spoiled by turning it up. I have seen a pipe line laid on the top of the ground bend about five feet out of a straight line, due to the effect of the atmosphere, and have seen them go up so that you could walk under them. This puts a strain on the line. Can't say for how far. When we laid this twenty mile line we covered it up generally the next day. Would lay twelve, fifteen or eighteen hundred feet a day with one gang. Tested the line frequently. I don't think we discovered more than three or four little leaks. They were very slight. We discovered them by walking along the line and heard them. I don't think I ever knew of an eight inch line that was laid that leaked so badly that it had to be taken up and another one substituted for it. The matters upon

which my opinion has been solicited have been talked over before I was asked the questions here. I talked to Mr. Hequembourg five or six weeks ago, and this forenoon just before I commenced to testify. Prior to 1890, the collars were lighter than the collar they are using now. General pressure test in the mills, so far as I have observed it, about 1,200. Have employed calkers in lines that I have been superintendent of. It is a good while since we attempted to calk any pipe. I concluded that calking was futile eight or nine years ago, and since have not hired calkers.

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*Re-direct Examination.*

The pipe that I spoke of laying in the ditch is not screwed together down in the ditch. One end of the pipe is put on a skid across the ditch all the time. Ordinary eight-inch flange unions would cost \$2.50 to \$3.00, exclusive of the cost of putting them in. I think a line should be tested at twice the pressure that you intend to carry on it. If a line proves tight at 600, it would probably be tight at a thousand, although that 400 pounds might make a difference. If your collars were heavy enough to stand that extra 400 the joints would be perfectly tight. If your collars were light and wouldn't stand the extra strain put on, it would leak.

*Re-cross Examination.*

I don't know what test is required as to steam boilers. We always try to have gas lines and fittings tested to twice what we expect to carry in them at the factory. When we write the order we generally write it out at twice the pressure that we intend to put on. Small pipe will carry high pressure more safely than large pipe, and such tests are not so necessary as to small pipe.

Thereupon, the plaintiff offered and read in evidence the deposition of JOSEPH N. PEW, which was as follows:

Depo  
Joe

I live at Pittsburg, and am president of the Peoples' Natural Gas Company, and have been since the company was organized in 1885. I first went into the natural gas business about 1882. If a line of eight inch standard pipe in the ground leaked under a pressure of 100 pounds at ten per cent. of the joints to such an extent that the leakage would empty the pipe in ten hours, I should say it would be rather a difficult thing to make a tight line out of it. We have sometimes improved a line considerably by iron calking, but it is not satisfactory. I think such calking would be permanent in

cases where it was accomplished, but strains produced by contraction or expansion would have a tendency to loosen the calking. I think a pipe line should be tested to double the pressure that is proposed to be carried on it. If an eight inch standard pipe line were tight at 600, it likely would be at 1,000.

*Cross-Examination.*

The old couplings that we made when I first went into the business were made straight and the pipe was tapered. They could not make a tight joint with those. I think all line pipe is usually tested to either 890 or 1,000 pounds, no matter how much pressure they expect to use in the fields, and I consider that a good enough test for any work that I have had to do.

*Re-direct Examination*

On the tests we make with the gas, mill tests don't help us any, if it don't hold gas.

*Re-cross Examination.*

Witness describes the method of handling pipe from the cars until it is strung ready to be laid, substantially as this process was described by the witness Duffield.

The plaintiff thereupon offered the deposition of ELIZUR STRONG, which was read as follows:

I live at Bakerstown, Pennsylvania, and am looking after the Standard's Natural Gas business. Have been engaged in natural gas business fifteen years, and have had experience in laying and managing eight-inch standard line pipe in connection with the gas business. I don't think that a natural gas line which, when placed in the ground under an air pressure of one hundred pounds, leaked at ten per cent. of the joints so that the leakage would empty the contents of the pipe, being eight-inch standard line, in ten hours, and that then the leaky joints were calked with iron calking, so that they were apparently closed, and under a pressure of 300 pounds 310 many of the calked joints leaked, and a number of those which had not leaked before showed leakage to such an extent that forty per cent. of the joints in the line leaked so that the pipe would empty in twenty-four hours, could be made tight for any continuous length of time, and I believe, in order to secure a tight

line there would have to be a change in the material. I am acquainted with the properties of natural gas produced in the fields of the State of Indiana, which is practically the same as the gas of Ohio. The pipes in Ohio deteriorate very rapidly from leakage. We have had pipes eat out in four or years from leakage of gas in Ohio and it has the same effect as the Indiana gas. It is the same quality of gas; a sulphur gas. I have had no experience with pipe in Indiana. In laying eight-inch standard line pipe for the conveyance of natural gas and in testing it in the field no attention is paid to the mill test with regard to the making of a tight joint. It is screwed together, supposing that the mill test is good and the pipe is tight in every respect. In my experience in laying pipe the majority of the leaks is in the mill end. We usually have our pipe tested to double the pressure that we intend to carry on it, and sometimes in excess of that. It is ordinarily cheaper to make repairs in the field than it is to ship the pipe to the mills and have the repairs made at the mills. In putting in a flange union there is a possibility for the line to spring a leak elsewhere, but if the threads and taper are correct in every way it don't seem as if moving the joined pipe around the three or four joints would cause a leak. If any of the joints within the space thus disturbed were defective it would probably cause a leak. I should think the cost of the ordinary eight-inch flange unions in 1890 was between four and five dollars. Expansion and contraction causes a leak in the majority of instances where there has been iron calking. It cannot be relied upon to produce a permanently tight joint. In repairing a line it is necessary to shut off the gas while you make your repairs. There is danger from leaky gas lines, particularly during the winter season, as when the ground becomes frozen the gas passes for a long distance under the ground, it is possible to go into a cellar or through a house and cause an explosion.

#### *Cross-Examination.*

I laid a line fourteen years ago of eight-inch natural gas pipe in Oil City from one to five miles in length. We never made any test, only turned in the well pressure, about 140 pounds. There was some leakage. There was a leak clamp on every joint of that line. We calked for a number of years before we knew anything about this clamping business. The clamp was not put on at the time the pipe was laid. We only expected the eight-inch line to carry ten ounces. This was a calked pipe; it is not screwed together; it is calked with lead. The next line of eight-inch pipe for natural gas that I personally had to do with was through Meadville; it was about thirty miles in length. They rolled it off from



the cars on skids, let it roll to the ground, hit or miss. If it was very steep, we sometimes let it down with a rope. It would be prudent to let it roll right off if the thread was properly protected, and let it go right against another joint of pipe, though a man would hardly let it roll thirty or forty feet on another pipe so that it would bound up eight or ten feet. It wouldn't do so much hurt if the threads were properly protected. If not it would bruise the threads and make them likely to leak. There was no test on this line made in the field further than the well pressure; 200 pounds was the highest pressure I saw on that line. An absolutely tight line can be made. I have seen one that was perfectly tight. We have some lines that don't leak, but there are collar-leak clamps from one end to the other of them. In the Meadville line the majority of the leaks were on the shop end. My views were that the mill before they screwed on the collar, not only had the collar 312 inspected, but they had the pipe, and the pipe was marked as well as the collar, which end should be screwed together, and that was the poorest end always. I laid a line of ten-inch pipe in West Virginia on which I used the Hequeubourg collar about six years ago. In that line there was twenty-two miles of ten-inch and about six miles of eight-inch. We used to be bothered a good deal by split tubing in our wells. Used to test it up to 2,000 pounds, and then it might burst at 1,800, where it didn't burst with the test of 2,000, so that we believe that a pipe will open up at a lower pressure like enough than what you used it at later on. Made no test of this West Virginia line; as soon as the gas was turned in we commenced using it. Leakage was small, less than five per cent, and the pipe was second-hand pipe. Laid another eight-inch standard line at Kane and Halsey. It has a Hequeubourg collar on. That was laid the year after the West Virginia line. A little calking used there, a little lead, not a large amount. Think this pipe was tested at 600 pounds at the mills. Line pressure on that line was not to exceed 175 pounds. Did not test it before turning the gas it and using it right along. Know of no instance in this state or Ohio or Virginia where a whole line of several miles was taken up and a different collar used from the collars that were originally put in the ground where the pipe was an eight-inch pipe. Don't know of any pipe prior to 1890 in any mill which was tested for a greater pressure than ten or twelve hundred pounds eight-inch standard pipe. The mill stamps the pressure on the outside. I never required any higher pressure than a thousand. I don't know that I ever saw any shipped out with a higher mark than 1,200, eight-inch pipe. I never applied twice as much pressure as I expected a line to carry in the field. The expense of calking a joint is very little compared with the use of a leak clamp. In old lines

we have to clamp ten or twenty per cent of the joints; some of them even more. That makes them tight for the time being. As soon as the clamps came into use we commenced putting them on and abandoned calking entirely. Cold and heat has great effect on the pipe.

313 I have seen it go to one side three or four feet and draw back at night to its place. This would strain the pipe a little, but if it was properly put together it would not hurt it. If the collars were sufficient and screwed up properly it ought to be the same as one solid iron pipe. The majority of the lines that I have spoken of are laid on the ground and thrown into the ditch afterwards. We try to put the pipe in the ditch in the morning when it is cool, when it is contracted as much as possible. The pipe sometimes moves from temperature change in the ditch. I think about 32 or 36 men are the proper number for a gang handling pipe and screwing it together. You can't tell by gauge whether your line is leaking while it is in operation. In order to do this it is necessary to shut it off. Men go over the lines looking for leaks. We go over our lines usually twice a year. Before we had them clamped we used to keep men going over them all the time while we were calking. The Ohio and Indiana gas is more likely to corrode and destroy iron than the Pennsylvania gas. There is no sulphur in Pennsylvania gas. Can't tell what percentage there is in Ohio or Indiana gas. The gas on the inside of the pipe will do no damage, but it eats out the pipe on the outside where it comes in contact with the air in Indiana and Ohio. I walked over some of Mr. Hequembourg's line when he had it filled with air, and I think it was pretty nearly a perfect line after he had calked it. There was once in a while a leak. That was in Indiana. I was sent over there by our people to see whether he had a good line or not. It had been reported that he had got the only line there was in the county, and being in the natural gas and oil business combined, I went out there on a tour of investigation. I spent about three days in Indiana. Hequembourg and I went down over the line. It was after he made his collar and was putting it on. Don't remember the year.

313½

*Re-direct Examination.*

I think that pressure on this line in Indiana when I visited it was about 600 pounds. Some of the line was under water.

Thereupon the plaintiff offered and read in evidence the deposition of JOHN TONKIN, which was as follows:

I live in Oil City, and am assistant manager of the gas department of what is commonly known as the Standard Oil Company's interests. Have been engaged in that business a little over ten years. If natural gas contains any large per cent. of sulphur, the effect upon a leak in the pipe is to cause the iron to be eaten out. A flange union for eight-inch pipe would cost probably about \$4.50 or \$5. That does not include the labor of putting it on. It would be possible, but not practical, to repair pipe with flange unions where the line ran through a swamp in which the water stood to a depth of from one to ten feet. There would be a great deal of expense in getting it in place and in blowing out the water out of the line. I would not regard it as practicable to put flange unions on ten per cent. of the joints of a line of eight-inch pipe. Would consider the line unfit for use if it required a thing of that kind. 8-inch standard pipe line intended to carry a working pressure of 300 pounds to the square inch ought to be tested at least double. If a line on a test proved tight at 600 pounds, I think it would prove tight at a thousand. Our experience has been that it is cheaper to repair the line with the materials we have in the field, regardless of distance to the mill, there are always more leaks on the mill end than on the field end.

*Cross-Examination.*

We had a man at the mills where pipe which went into our line in Sandusky was made to see that it was tested properly, and we made no further test of this pipe, except when we put the 314 gas in, putting the line in operation. We made no test on the field. Part of that line was laid after the ditch was opened, and part before. Pressure on the line was 250 to 300 pounds. It was a good line. The pipe I think was 25 pound pipe, it may have been 27; the collar the ordinary collar in use at that time. On that Sandusky line we used asphaltum—black paint as a lubricant. Some of us think oil is about as good. My theory is that if there is any break in the thread on the pipe the paint might temporarily cement it by hardening, but any action of the pipe, contraction of the pipe or anything of that kind, would break the cement; it only acts as a temporary benefit. Have not satisfied myself about this by experiments. I can't recall what the test made in the mill was on that Sandusky line. I took up and relaid a line in West Virginia in 1894. Made no test of that to see how much it would hold ex-

cept by the gas test. Didn't try calking. Had some leaks. Put clamps on. An ordinary collar is not as expensive as a clamp. I have known a gang of eighteen to twenty men on good level ground with no obstructions to lay between four and five thousand feet of pipe a day. Where the hills are bad they can't do half that. Had a pressure of 300 pounds on this line. We didn't use a great number of clamps there. I never saw any evidence of motion in the pipe after it was laid in the ditch, except the calking parting where it had been made tight by calking, in a month or six months you might find the same condition there as there was before, showing that there had been a tearing apart. Have seen lines move on top of the ground. I wouldn't want to leave a fifty mile line on top of the ditch. I would put my ditch in as fast as I could. In hauling pipe, there would be great danger of breaking or damaging the threads if they came into contact. There might be a difference of a sixteenth or thirty-second of an inch in the taper between one piece of pipe and another that you couldn't detect with your eye. We have apparatus for making repairs in all fields where we have got lines. On the Sandusky line we had an eight inch cutter and an eight inch guide to put the thread on and cut the pipe. In 315 case you would have to bend pipe we simply make a wood fire and bend it by standing on the ends. It is not very difficult to bend an eight inch joint of pipe if it is hot. To bend it cold would have a greater strain upon the pipe. Never tried to make much of a bend in an eight inch pipe cold. We can make a true thread by that apparatus in the field, as good as in the factory. We have no apparatus for making threads in the collar in the field. If there was trouble there we had to get another collar. I never saw any machine made for making a thread on the inside of a collar to carry in the field with you. We use the tongs on pipe threading, the die is stationary, set on the ground, and then cut the thread by turning the pipe. If we were going to lay a line through Pittsburg with a pressure of four or five hundred pounds, I would want the pipe from the mill to show a test of 1,000 pounds, then I would be perfectly satisfied with it. If it were tested at 600, I think it would be all right as to leakage up to 1,000, not as to structural strength. I don't know that all the questions that I have testified about were discussed before testifying with counsel examining, but some of them were. With screw pipe, I have not seen clamps put on as often as one in ten. You might see them for a few joints that way, but it wouldn't hold good for a line. Common thing in screwing up pipe, to see a man stand near the collar and tap it with a hammer.

Thereupon the plaintiff offered and read in evidence the testimony of  
THOMAS CHESTER, as follows:

I live at Pittsburg. Am agent for the National Transit Company pipe lines; buyer for Joseph Seepfin, buying production balances from producers of oil, and also in charge of the inspection of pipe for the different pipe lines. Have had charge altogether of inspection of pipe for pipe lines for about twelve years. Am familiar with eight-inch standard line pipe. Am familiar with 316 mill tests. After the pressure is applied to the joint

I would not think that there is more than a quarter of a minute, not to exceed a half at any time, taken in the application of the test. In order to get a tight joint you should have uniformity of thread and taper on the pipe and collar. If you bring pressure enough to bear on the pipe to screw it together with a defective thread you might make a joint there absolutely tight so long as the line remained in the position in which it was placed, the least disturbance would develop the defect and it would become a leaker. I observed the manufacture and threading of eight-inch standard line pipe at various mills. They take a plate of iron of the width that it is necessary to make, or that their experience has taught them it was necessary to make a piece of pipe, and that pipe is put into what they call a bending furnace; in there it is heated to the degree of heat that is necessary to bend it, and then it is drawn through a die or tool over a ball and shaped out to the necessary shape. In that way they provide for an overlapping of the edges of the material so as to make their weld; and from the bending furnace it is taken into the regular furnace and heated to what they call a welding heat, and from the welding furnace it is sent over a ball that is situated at the mouth of the furnace supported by a rock between two concave rolls; that is, they are shaped about the size of the pipe that they want to make eight-inch; and from that it goes, after it has passed over those rolls and over this ball, it goes into another set of rolls in some mills, and in some not, and in others it goes directly from the furnace into what they call the straightening rolls, where there is water applied and it is gradually cooled off, and comes out on to a platform on which it is rolled to another one and left there to cool to such an extent as may be necessary to prepare it for cutting off the ends and putting on the thread; then from that point they take it up and they cut the end, just the end of the pipe off, and introduce it into the machine and cut the end of the pipe off, then immediately start 317 to cut the thread on it; and after that thread has been cut on they take the pipe out and turn it end for end and fasten it in-

to the tool again and while that tool is revolving they put a collar on the first thread end, and after that is screwed in place they bring the pipe out, cut off the end, and proceed to cut the second thread; from there it goes to the test. In some cases there is a material difference in size between the two ends of the same piece of pipe, then on one end of the thread can be cut without trouble while the dies will not cut the other. It is necessary to drive that end of the pipe up against the dies with a hammer or ball it out. We have found that it does not make a good joint. The condition brought about by that hammering is they have a corrugated surface, which, although not apparent to the eye still maintains itself. In most of the mills where we have been working we find that the collar is put on the end that they have hammered most, if they do any hammering at all. Our experience is that goods of this character won't make a tight line, and if we are aware of such defects we reject the pipe.

*Cross-Examination.*

Am not a practical mechanic. Have never made or threaded pipe. A thousand pounds hydraulic pressure is the customary test at the mills for eight-inch standard pipe line. In inspecting we aim to get 2 1/2 inches of thread; would not allow it to be 2 1/4; 2 3/8ths was the minimum. I was first talked to about being a witness in this case last Saturday by Mr. E. Strong, who is with the gas company in Oil City. He asked me to go and see Hequem-bourg at the Monongahela House. I saw Hequem-bourg this morning for about an hour before testifying. My duties began in inspecting the pipe just before it went into the trough to be tested. Just before that I examined it for blisters and holes, and so forth. It would ordinarily be in a position where it could thus be inspected for fifteen or twenty minutes. We never inspected the shop 318 end of the pipe. My men had nothing to do with that further than to examine the threads on the collar to see that they were not manifestly defective. Paid some attention to the taper. Examined the end of the pipe for taper, and also the collars. Have seen pipe put together in the field, and have seen a workman pound it a little as it was being screwed up. Don't know why; never could find out. In putting a collar on in the mill they cut the thread of the pipe, then put the pipe in a machine, start the collar on by hand, fasten the collar with a pair of tongs and turn up the pipe into the collar with the machine. They turned the pipe until they could see no more of the threads. Sometimes they stopped, leaving a thread or two out. Our inspection for gas line in the mill is precisely the same as it is for standard oil lines. There has been no recent change in the manner of testing eight-inch natural gas pipe

except in the Chester mill. Apply about the same pressure in testing. For mill purposes 1,000 pounds is as good a test as need be made. Care must be taken in the field as well as in the mill. We figure that the point of the pipe is always the one that makes the joint, and half the threads must be good, clean sharp threads on that end. If the threads nearest the end of the pipe are broken down or blunted they must be fixed up before they can be introduced into the pipe. It is generally done by filing it, or chopping it with a chisel. Have seen that done in the field on an oil line. Such defect might have been an original defect or have been occasioned by striking something. You can destroy any thread by a hammer. I think a contact of an inch and a quarter of threading is the least that is necessary to secure tightness. I have seen pipe pull apart without anything touching it, from the effect of heat and cold—pull the collar right off. It generally occurs at the joint, but have had pieces sent me from the field of eight-inch pipe as though it was broken right in the center of the joint by expansion and contraction. I have seen pipe come back warped and twisted 319 and in every other shape, as the result of contraction and expansion. Men are strong enough with their tongs to break the threads in screwing up the pipe. There would be more injury done by screwing pipe up too much than too little. The mills always screw the collar on at the poorest end of the pipe, if the pipe has a poor end. If there is any poor thread at all, and it is not discovered in the mill under an inspection, it is always on the shop end. The mill might not know anything about it, and their foreman on the floor might not know anything about it. It might be the result of accident as much as anything else. A man might leave his tongs too long on the pipe. He might destroy every particle of thread that was there, and it not be any fault of the mill, or any inattention on their part. My inspectors do not unscrew the collars to see what the threads are. I wouldn't wish to state that there are any pains taken in the mills to put the collar on wrong. I don't know that I can recall any other variety of collar than the standard collar in the eight-inch line. So far as I know, that is as good a collar as can be made. Am reasonably well acquainted with the methods that are used for the manufacture of collars, and I would pronounce this collar as good as any known to the art, to all intents and purposes. There is no radical change in the mode of cutting threads on pipe and collars from what there used to be. I have found this balling out process was all right for a joint in the mill, but if you break that thread in the field, the pipe not being true to round, you couldn't cut a thread in the field, and that is why we objected to that process. Some of the mills don't use that process now. In some they still use a hammer.



Thereupon the plaintiff offered and read the deposition of A. B. DALLY, Jr., which was as follows :

Dep.  
A.

I reside in Grafton, Pennsylvania. Am connected with the Wheeling Natural Gas Company as general superintendent. Have been in the natural gas business 11 years. You should have uniform threading and taper on a pipe and coupling in order to get a tight joint. Pipe in line laid for the conveyance of natural gas is tested in the field with gas ; we usually turn gas into the line ; air is sometimes used. If the pipe cannot be connected with the wells, then air is used. In the construction of a line of eight inch standard pipe for the conveyance of natural gas, intended to carry a pressure not exceeding 1,000 pounds, guaranteed to prove tight in line at such pressure ? I would want from fifteen to eighteen hundred pounds put on the line as a test before allowing any workman to go near it either to prepare or do any work about the line, or operate it.

*Cross-Examination.*

Had nothing to do with laying eight-inch standard line pipe prior to 1890. I was in the field about four days in the week when our company was laying a line of eight-inch pipe, about five or six miles, in 1892. This line was laid on top of the ground in putting it together. It was buried at road crossings and across one field, about ten or fifteen hundred feet was buried. That pipe was subjected to eight hundred or one thousand pounds pressure in the mills. I think it was tested to eight hundred pounds. This line was under pressure of 120 to 125 pounds. I never took a leaky joint apart to ascertain what the point of contact has been between the threads and how much was bad ; not on eight-inch pipe. Never took a joint apart that was leaking to see whether it was lack of contact that was making the leak or something else, and have not seen that done. 2½ inches of thread has been the standard for a number of years to my recollection. I have seen less on pipe and collars that have been taken apart. My report on that line was that they were few leaks, the leaks were ordinary, you are liable to have a leak here and there. Leakage seemed to be at the collar.

321 There were a few on the mill end, and some some on the field end. I don't know in what proportion. Pipe will raise up, but where the ground is level it will go out in a circle rather than raise up. The highest raise that I have ever seen is six or eight inches, and have seen it push off to one side two or three feet. Those larger movements would be where it was making a curve. If the

Jr. line had been put together and lowered in the ditch before sunrise there wouldn't have been very much of that noticeable. We aim to put very much of a line into the ditch before the heat of the day, if it is laid in the summer, to avoid the effect of expansion in the collars. There is more or less motion in a line from frost. Aside from frost I wouldn't expect a line buried in a ditch to move, but the joints disorganize. Referring to fourteen miles of twelve inch lead joint pipe, I believe that most of the variation there is due to the effect of the land itself. It seems to move. There is another element, the temperature of the gas. It is colder than the general atmosphere when it comes out of the wells. We get a good deal of leakage on that line, get more or less on all the lines. Have had some lines in connection with our business that I considered very tight. An absolutely tight line is unusual. We have more leakage in the spring than in the fall. Fifty percentage of such leakage as we have, is from January to May. We do not have a different brand of collars from other companies except in some cases. We have a number of eight inch collars that are heavier—longer than other collars. They have the same kind of thread in them, and the same taper, and a recess around which you can run lead. We prefer them to the other collar. On this line of five or six miles of eight inch pipe, we used for lubricant what is known as as Hunzeker's cement. As far as I could find out it worked well on this line. Care is necessary in unloading and handling pipe. Collars generally supposed to be screwed clear up in the mill, but I have noticed them turn a little tighter in the field. When the pipe is bent 322 we bend it by heating it first. With eight inch pipe, if we should try to bend it cold, it would collapse, and if the iron was not extraordinarily good, it would give way, break in two at a certain point. Before 1891, I don't know of any pipe that was tested beyond ten or eleven hundred pounds at the mills. I at that time deemed that a good and sufficient and ample test, but don't now. So far as I know, the mills at that time had no apparatus for applying a bigger test than that. I never applied an air test in line to any eight inch pipe.

The percentage of leakage in our eight inch lines that I have referred to, does not amount to one leak reported on each of those lines per month. We have an eight inch line that is about three and a half miles in length, laid in 1887. Have not had any report of leakage on that line except as to sleeve in which lead is used, or at a gate flange, during the past four or five years. From this experience I make the statement as regards our eight inch lines. We have about 125 miles of natural gas pipe line all told. The leakage on the lead joints is much greater than on the screwed. On the three and a half mile line, pressure of 310 to 315 pounds was put

on. I don't know at what pressure this pipe was tested at the mills. I believe that boilers that are to be allowed to carry 150 pounds, are generally tested to 210 and 220. Temperature of gas that flows from the different wells in the fields that I am acquainted with, is about 60 degrees Fahrenheit at the point of delivery for consumption. It varies at the well, but will go as low as thirty-four degrees. The season of the year does not affect the temperature right at the well. The average at the wells is in the neighborhood of forty degrees. I never saw a joint of pipe calked with iron, and then exposed to heat, tight before it was exposed to heat, and loose afterwards. I did not conduct any such experiment. I have never seen an experiment where a joint of pipe was calked and exposed to a great degree of cold that loosened the calking.

Same witness recalled.

In the construction of a line of eight-inch standard line pipe for the conveyance of natural gas, intended to carry a working pressure not exceeding 300 pounds to the square inch, and guaranteed to prove tight in line at a working pressure not exceeding 1,000 pounds to the square inch, if the limit of the working pressure is to be 300 pounds, the line should be tested at a pressure of five or six hundred pounds; but if the working pressure was to be as high as 1,000 pounds, it should be tested up to 1,800 pounds.

#### *Cross-Examination.*

I don't know specifically of an instance where calking was detrimentally affected by change of temperature in the pipe, except that collars that were calked, leaked again. I believe the leak was caused by the action of the elements on the pipe, causing it to move. I have not arrived at this by the process of exclusion, but believe that a collar that has once been calked and which is reported as leaking again, is brought about by a movement of the line in the ditch, if exposed, caused by expansion and contraction incident to gas lines. If 100 joints are calked properly and then subjected to temperature change, the leaks show up one at a time, or a number at a time, and perhaps not all at once. I can't tell what the smallest degree of change by contraction or expansion is that I have ever noted or observed in iron. Do not know what the smallest degree is that is mentioned by any authorities that I have read. Have read some from Haswell on the subject, perhaps within the past five or six years. Haven't looked into a book specifically on that subject for four or five years. On very warm days I have seen eight-inch pipe push out of its regular course on the

ground as much as a foot, usually at a place where the pipe had a bend or circle in it. These bends would occur at various places along the line, in some cases 100 feet apart, in others three or four hundred feet. Don't know what degree of heat is necessary to occasion a bend in a bar of iron in a shop.

Don't know what the temperature is under the surface of the earth.

324 Thereupon the plaintiff offered and read in evidence the deposition of GEORGE H. BROWN, as follows:

I am not doing anything at present. For seven years nearly I was general manager of the Philadelphia Gas Company, and for eight years previously superintendent of the Pittsburg Water Works. Have been connected with the gas business nearly seven years. Philadelphia Gas Company has to do with the transportation of natural gas and operates in various counties in Pennsylvania and West Virginia. We have approximately 1,000 miles of pipe. Can't tell how much eight-inch we have. Am familiar with eight-inch standard line pipe. There should be two or two and one-quarter inches contact between the thread of the pipe and in the collar in order to secure a tight line. Temperature changes will always increase the leakage of pipe. The tests on our company's lines are usually made by turning in the full pressure of the well on the line.

In many cases the tests are made with air where it is more convenient. Iron calking is only a temporary expedient on an eight-inch standard line pipe subjected to a pressure of 300 pounds and is of no permanent value. Calking is simply a process of turning down a small portion of the iron, thin filament of iron, and pressing it against the pipe. The cross-section is comparatively light. When the pipe is heated; possessing a large mass, it cools more slowly than this lighter annular ring which is calked outside, and when a pipe cools down it leaves an annular opening around between the calking and the outside of the pipe, and with every change of atmosphere it would require continual calking to maintain it perfectly tight. A line of 12 miles of eight-inch standard line pipe, having been put together with proper care, and developed leakage in ten per cent. of the joints at a pressure of less than 100 pounds, and, after the leaky joints were calked, upon an increase of the pressure to 300 pounds many of the calked joints leaked anew, and other joints leaked to the extent that forty per cent.

325 of the joints showed leakage, could not be made tight at a working pressure of 300 pounds by any method that I am acquainted

with. There is danger in operating a leaky gas line, especially during frosty weather, because frozen ground is very impervious to the passage of gas, the only outlet which it has is lateral. It may find its way to a sewer pipe or other openings into houses and cause explosions by the introduction of some incandescent body subsequently. An 8-inch standard line pipe ought to be tested to at least double the working pressure in order to develop any imperfections which might be in either joints or pipe. In testing the pipe I never paid much attention to the mill test. It simply develops any weakness which might be in the pipe itself. It don't test a joint properly because you can make a joint that is perfectly tight for water that will not be tight for gas, probably.

*Cross-Examination.*

I have talked with Mr. Hequembourg and talked to the counsel who has just examined me on the subjects about which I have testified. I don't recall any one else. I should think the longest eight inch line that our company has is about twenty miles. My testimony is based wholly upon lines and observation of lines and the workings of our own company. We have another eight inch line about the same length. Had nothing to do with their original construction. The longest line our company has is about eighty miles. Can't tell how much eight inch pipe there is in that line. I had to do in a general way with the construction of that line. The threads were not accurately cut as they should be in that pipe, and the joints were not tapered on a branch line three or four miles in length. My knowledge of eight inch pipe lines is not of the intimate nature which would be derived from walking over the lines, but simply from the information which I received at the office from various employees. I don't know that there was any one line which I could state I was more intimately acquainted with than another. I do not say that there is no taper or threads in the 326 usual standard collars. The three or four mile length had those collars. I said I was not aware of the fact that there was taper, because I never examined the pipe personally. I would not say that there was or was not. All my information was derived in a general way as general manager of the company. That is true of all the testimony I have given, except where I have otherwise specified. I have never measured taper on a pipe to ascertain its taper. Know how to do it. I don't know that there is no eight inch pipe that is round. The pipe itself is not perfectly round, probably, but where it is turned off and the threads are cut, it should be perfectly round because it is done by machinery, and if there was any inequalities in the pipe, it is cut off by the tool. The

tool is bound to cut it round, except the pipe is too light and it springs on the tool. I don't know the thickness of standard eight inch pipe line pipe for conveying natural gas. I do not remember the weight per foot of standard line pipe. Have seen men in the field with their hammers pounding the end of the pipe when the connection was being made. It may be for the reason that the thread is cut imperfectly, and binds at certain points. I think the pounding is done to relieve the joint where it is bound, either by imperfect cutting or poor work. They don't always pound in the majority of instances, when making connections. It would not be necessary with a pipe that was properly constructed to do anything of the kind. I don't think we have a line in our company, three miles in length, of eight inch standard pipe that has been operated for any length of time without some loss of gas. I don't know of any in this neighborhood. The reason was, when they first started they did not take the precautions—they did not deem accurate workmanship as absolutely necessary for the transportation of gas. Sometimes a pipe might be sprung in threading by feeding too fast. Bends in the pipe are made by heating the pipe and springing it, while it is hot. You are liable to split the pipe by bending it cold.

We don't put anything upon the threads in laying a line in the 327 field. With a thread that is perfectly cut, you would simply spoil the cutting by applying any applications upon it whatever. They may have greased it. I think they usually put oil on at the mill in putting the collar on. We screw pipe in just as far as we can get it. In properly constructed pipe the thread ought to go clear home easily, to within the last few turns. I do not know what the mill tests are on any pipe that I have laid for my company, eight inch standard pipe. They reported to me that they were tested at 1,000 pounds. I don't think we ever conducted any air pressure tests of eight inch standard line pipe in the field. The highest pressure I ever saw in a line was 400 pounds. The result was we had leaks in some parts of the line course. Remedied the leaks by calking. I never experimented with pipe calked to see what effect contraction and expansion would actually have upon the calking. Our lines are substantially all under ground. Under the ground there is less change of temperature. I have seen pipe pull out three or four feet on top of the ground to one side where they are subjected to the sun's rays. Our boilers were calked to some extent, steam boilers. I don't know how long it lasts. There was a pretty good chance to see whether the temperature affected the calking. Water corrodes the joint and makes tight, where if you turn on gas it will probably leak. I think the factor of safety in steamboat boilers is double, but in many cases I think it ought to be three or four times. I would be surprised if told that the

government inspection was only one-third over the amount carried. It ought to be higher than that, especially steamboat boilers. Hequembourg and I were discussing the question of the factor of safety. We both expressed our opinions, but I don't know what other witnesses have testified to here. We required tests at the mills in laying lines of pipe. I suppose mills can make a test up to fifteen hundred or two thousand pounds. It depends upon their accumulators. I don't know what the capacity of the mills was 328 prior to 1890. Don't know of any instance in which any higher test than 1,000 pounds was applied prior to 1890 of my own knowledge. Can't say whether I ever heard of such a test. We have practically thrown away a line with lead joints. The lead will expand, and possessing no elasticity whatever, it don't recover. Out in the fields with the screw lines, we have never had much trouble.

JAMES CUTTEL, a witness called for the defendant out of order, testified as follows:

I live at Potterville, Michigan. Was station agent for the Grand Trunk at Ainsworth, Indiana, in 1890. Saw pipe unloaded there by rolling it down on skids. It was put on the top of the skids and allowed to roll down. Sometimes it rolled straight, other times one end would get a little the start and strike the ground before the other. Sometimes it would roll down crooked and roll off the skids and strike the ground. Most of it rolled down straight. Occasionally the pipe run crooked and struck the ground, one end first. It made considerable noise in striking against the pipe that had previously been unloaded. I think a few cars were unloaded with ropes, most of them without. In a good many, they used ropes to lift the pipe from the bottom of the car to the top of the skids. I couldn't state what proportion of the pipe that was unloaded I saw unloaded. I had to go there to take the numbers of the cars. and check them on the way-bills. Sometimes the protectors flew off striking the ground. I never noticed whether the threads on the end of the pipe were bruised any.

#### *Cross-Examination.*

Sometimes when unloading, they eased it down with ropes. I remember Mr. Button and Fred Hequembourg having charge 329 there. In 1891 they unloaded with ropes. In 1890 they didn't unload many cars with ropes. The ground was clay.



There were no stones there. Sometimes there were sticks used to prevent the pipe striking, and sometimes I saw it strike the sticks. Button rolled the pipe down by raising it to the top of the skids and let it roll. Hequembourg eased it down with ropes; I think Hequembourg eased all down that way that he unloaded. Button let pretty near all of it run down without ropes. I think the first few cars were unloaded by easing them down with ropes, and they abandoned the ropes after that. Nothing in particular calls to my mind the fact that they started with ropes and then abandoned the use of them. It is a considerable guess on that. I can't remember now whether it was at the beginning or end of the work that ropes were used. I think Button superintended the unloading of all the first lot of pipe.

F. S. HOOVER, a witness called on behalf of the plaintiff, testified as follows:

I live in Bolivar, New York. I am in the business of producing oil and gas. In July, 1891, I went into the employ of the Construction Company. In September, October and November I was operating the pipe cutting machine on Deep river. It was operated by steam power. Where the threads were bad, we cut the pipe off as far as the threads were bad and straightened the pipe that was crooked. Part of the time I had five or six men working under me, sometimes only two. We repaired in various ways about 1,700 pieces of pipe. I had a conversation with Mr. Gilbert of the Crane Company on the 5th of August, 1891. As I remember he said he could furnish from fifteen to twenty thousand of the Hequembourg couplings at \$2.65 a piece. I made inquiries among other manufacturers as to what they could be made for. I went to see 330 them myself. I took the same sample to the different places. I went to four or five places. I don't remember what any of them said they would make them for except the Strohm Company. I think they put it at \$3.10. So far as I know, no other price was submitted by anybody.

*Cross-Examination.*

I straightened about 170 joints of pipe which had been bent. I straightened them cold and never had any of the joints break. I have seen pipe heated in order to bend it. It would be easier to bend it heated and be less likely to break. The pipe that I repaired came from the line that was laid north-west and south-east from the station at Deep River. I think a couple of loads were

brought from Ainsworth, ten or twelve joints. It was easy to tell whether the pipe had been laid in the ground. I may have seen thirty or forty joints taken up myself. I don't know whether it was carefully done. It was done as I would have done it myself. We straightened only one joint at a time. We did not straighten several joints when screwed together.

B. T. KENNEDY, a witness called on behalf of the plaintiff, testified as follows:

I am secretary of the Columbus Construction Company. Have been with them seven years. I was cashier in 1890; had charge of the accounts and finances in the office at Chicago. The Columbus Construction Company in 1891 purchased and paid for a large quantity of heavy collars or couplings from the American Tube and Iron Company, and some from the National Tube Works Company. I have made an examination of the vouchers and calculation to show the amount paid for them, with freight.

(The plaintiff here offered in evidence "Exhibit Kennedy-1," which shows the amount to be \$103,748.94.)

331 I have made a calculation to ascertain what would be the freight on the amount of Crane pipe delivered in 1890 from the mills to the delivery points, and find that it would be \$24,448.89. I have made computations from the examination of papers, books, vouchers, and so forth, of the company, in respect to expenditures made by it upon taking up, relaying, unscrewing collars and putting them on again, calking, and so forth, upon the 106 miles of Crane pipe. I have made a statement as to the correct amount so far as I have been able to trace the details of it. I have examined a large number of field reports purporting to have been made by various foremen in the work of repairing this pipe. The reports are in the witness room. From this examination I have made the statement concerning screwing pipe, hauling pipe and collars, labor of threading pipe, uncovering pipe, unscrewing pipe and couplings, covering pipe, calking and bridging. Field reports indicate the location of the work in most all cases, and I have located it as being Crane pipe from the stake miners. I was familiar with the map of the route. I have the map here in court. My information as to the amount paid is on the time book, and it was paid through the rolls of the company. I have examined the time books. I did not examine the field reports myself, but did a portion of them. My assistants, Mr. Tobias and Mr. Leonard, helped. We three examined them all. On this statement the let-

medy. ters "O-C," with a dash between them, refer to the differences found between the foremens' reports and the time books. Whenever there was an overcharge on the report as compared to the time-books, we made a separate statement and deducted it. The statements are made on the basis of the time-books. The item of threading pipe was a matter, so also the lumber for bridging, and the threading machine and calking, removing couplings at the Deep River proving station. Overcharge on pipe was obtained from figures on 332 the approximate estimate, the difference in price between what was shown on that and the price shown on the invoices. The approximate estimate is one of the papers first offered in evidence. I have examined the vouchers and checked them over with reference to these accounts. They are present here in court. I knew that they related to the matter of expense of running the thread mill, for instance, in the case of the salary of F. S. Hoover; he was running the thread mill, and his salary was charged to that account. The information is all in vouchers.

(The statement marked "Kennedy Exhibit 2" was then offered in evidence, the vouchers above referred to being in court and subject to examination by defendant's counsel. Said "Exhibit 2" shows a total of \$1,471.43.)

The statement now handed me is for lumber for bridging. The information is taken from vouchers. They are here in the court room.

(In connection with said vouchers, so far as they might be deemed material, and for the purpose of examination by defendant's counsel, the document marked "Kennedy Exhibit 3" was offered in evidence, which shows a total of \$2,094.81.)

The statement as to the threading machines was also taken from vouchers. The vouchers are present in court.

(Said statement is offered in evidence as "Kennedy Exhibit 4," in connection with the vouchers referred to therein, and shows a total of \$3,883.46.)

The item for calking for 1890 is derived from vouchers. I have examined them for the purpose of ascertaining the amount. They have been paid by the plaintiff company.

333 (This statement, in connection with the vouchers, is offered in evidence as "Kennedy Exhibit 5," and shows a total of \$3,415.98.)

Another statement taken from vouchers which I have examined and which have been paid by the company, and which is an item

for removing couplers, is offered in evidence as "Kennedy Exhibit 6," in connection with the vouchers to which it refers, and which shows a total of \$1,544.45.)

All of the vouchers above referred to are in court. The item on the general statement as to the Deep River proving station, marked "Ex.", means "expense." I have a detailed statement from vouchers, from which the same was made. Said vouchers have been paid by the company.

(Said statement was offered in evidence and marked "Kennedy Exhibit 6" and was excluded by the court, to which ruling of the court the plaintiff's counsel then and there excepted. Said exhibit is as follows):

I have a statement in detail of the credits from moneys received on sale of old couplers, which is offered in evidence as "Kennedy Exhibit 7," and shows a total of \$6,796.59.

I have detailed statements of the moneys expended for screwing the Crane pipe when it was relaid. It was made up from the examination of the reports, and accurately states the results. I have a similar item for hauling pipe and collars made up from similar sources; and for labor in threading pipe and uncovering pipe and unscrewing pipe, all made up from the same sources. I have a statement showing the expense for hauling Crane pipe to the line in 1890. (The paper which is marked "X" is here identified by Mr. Kennedy.) The number of couplings taken off and put on, the cost of which is included in the statements, was about ten thousand. Mr. Leonard was in the office of the Columbus Construction Company as paymaster, in 1890. Mr. Tobias was in the field office at the time; that is, in 1891. Henry Coyle was superintendent of the Deep River division in 1891.

#### *Cross-Examination.*

I have been secretary of the company since about March, 1892, and am custodian of the books and records. Am secretary and treasurer of the Indiana Natural Gas and Oil Company. The vouchers I have referred to have been in the custody of the Gas and Oil Company for several years. That is, the office of the Construction Company and the Gas and Oil Company were in the same room, but the papers were kept separate. They were in the same vaults, however. I was on the line of the company sometimes during the period covered by these statements. I was on the right of way nearly all the time during the preliminary survey, and in 1890 I used to go down to pay off the men. These statements

ready. date principally from 1891. I don't remember that I was down there at all during that year. I had nothing to do with making up the papers from which the statements were compiled. They were the original reports. Neither Leonard nor Tobias had anything to do with the original papers. These statements were made up under the direction of our attorneys, who told us to draw up what we could find was work done on the Crane pipe. The work of myself and Mr. Tobias and Mr. Leonard was done jointly. I looked over their work in a general way. It was done under my direction. The books of the Columbus Construction Company were kept in 1890 and 1891 under my supervision. I was responsible for their keeping. The statements that were made up from the foreman's reports were taken from his reports directly, and the statements that were made up from the vouchers were taken from the books; that is, the vouchers had the information, but our books are kept in the shape of voucher records. The information, however, 335 comes directly from the vouchers. I could not have got the entire information from the books without the vouchers. There were some things that were mixed and might have been charged to one or two different accounts, and some one had to use his discretion as to the proper account to which the items were to be put. For that reason we had to refer back to the original voucher which had the description of the entry, that is, a description of the thing we paid for, showing what the money was paid for. In making up the statements which were offered in evidence, except the account for selling old couplings, I referred to the original vouchers and to the books. I referred to the books because they were guides in showing what vouchers to get into the account—that is all. I think I followed the distribution as contained in the books. The most of it was done in April, 1897. Prior to that time, or prior to the last trial of the case, the original books of account of the Columbus Company did not contain any separate account showing these charges entered in their books against the Crane Company, or any of them. In 1890 or 1891 we were not carrying any account against the Crane Company which included these items. There never was at any time on the original books of the company any account showing our claims against the Crane Company for the items embraced in these statements. I don't believe it would have been possible, under the system of book-keeping pursued in 1890 and 1891, to have kept a separate account of the items such as were applicable to the Crane Company, and such as were applicable to the other work. For instance, when they were screwing pipe it was running right along; the location of the work was indicated by the stake numbers on the report, as we have always carried on our reports through the whole

progress of the work, and the only way it could have been picked out would have been to have been familiar with the stake numbers and pick it out in that way. I think it would have been impracticable at that time. If the reports did not show anything on their face we could not tell whether it was done on Crane pipe or not, only so far as they located the work. Until we looked up the location of the work and became familiar with the fact as to where the Crane pipe was taken up and relaid, of course it would look rather vague. There is no information now contained in the field reports, supplemented by the knowledge of the stake numbers, which would enable one now to pick out what could have been picked out at the time. The process I have gone through could have been gone through with as the work progressed in 1890 and 1891. I did not have all the papers; that is, all the field reports. The people in the field office did not separate it; I separated it since. I have no particular information which enables me to do so which did not exist in 1890 and 1891, only that I went through the reports and found the stake numbers where the pipe was recovered. Any one who had given his mind to it could have done it as well then as now. The information had to be picked out from the original papers and vouchers. They were as complete in 1890 and 1891 as they are now. Assuming it to be the case in the Tolleston marsh that they took up one length of Crane pipe, took off the collar, put on the heavy collar and relaid it, the only thing there is about this paper enabling me to separate the expense of taking up and taking off the old collars from the expense of screwing on the heavy collars and relaying them in the ditch, is that there was a gang generally unscrewing at one time, and it was so stated on the report. Where the report shows on its face that part was for unscrewing old pipe and part for screwing new pipe, I have included both in this statement. So far as it could be traced these statements, with their totals, include both the expense of taking up the Crane pipe, taking off the old collars and the expense of putting on the new collars and relaying the pipe and covering it up. There is no way of distinguishing on these papers between the two kinds of expense where it was all done by the same gang. In Exhibit 2, two drip-pans referred to, I find from the voucher, were bought at an expense of \$2.50, and were used for the pipe shop at Deep River, and was an expense in connection with threading pipe by Mr Hoover. It is one of the expenses for the operation of the threading mill. I have made no changes in the distribution as it had been made in 1891. The entire expense of operating the threading station is shown in the statement presented this morning. The item—salary for Mr. Hoover—is his entire salary. He was entirely occupied, as

reported to me, operating that mill. If it was incorrectly reported to me that he was occupied all the time at that threading mill, my classification of his salary as an expense for the threading mill would naturally be incorrect.

HENRY COYLE, being recalled on the part of the plaintiff, testified as follows:

I was at Deep river during the time repairs were to be made to Crane pipe in 1891. I have examined the reports marked from 1 to 9, which have been offered in evidence as Kennedy exhibits. Many of them have my signature for approval. When we commenced work, we had only one office, and the foremen came in to the office and made their reports there, that was near Ainsworth. When we got further along, so that there were miles between, we had barracks each way, and the foremen made their reports there, and they were sent to the general office, which, later on, was at Hobart. I was back and forth over the work daily. The signature of some of the foremen who made the reports I could identify because I know them; others again I identified by having O. K'd  
338 their reports. Where I O. K'd the reports, I know they did their work, I was on the work every day where the men were working. I put them at their places, and directed the work to be done, and saw that it was done, and afterwards O. K'd their reports. It is upon these facts that I have identified the reports signed by them. I was familiar with the stake numbers and the location of the stakes on the line. I have made a memorandum of the field reports which I could identify. It is numbered as the field reports are numbered. On a little slip to the left it shows the ones I could not identify.

(The memorandum referred to, is offered in evidence as Exhibit Z, and shows 593 reports, of which Coyle was unable to identify 14.)

The work referred to in these field reports was done on the Crane pipe without exception, I believe. I am familiar with the stake numbers. They include the lines laid across the Tolleston marsh, and also northwest and southeast from Deep river. Those are substantially all that were screwed when I went there.



*Cross-Examination.*

I was with the Columbus Construction Company in 1890. I came up to the Deep river section in 1891. The earliest date covered by these field reports, is the last of July or first of August, I believe. They do not represent work done before I came up there. The last of the dates covered by the reports is the fore part of December, 1891. During those four months I had charge of the Deep river division. My line extended from Deep river three or four miles south-east, and to a point five or six miles east of the Illinois State line. I didn't have much to do with taking up the old Crane collars, and laying the new ones on the Kankakee 339 river. I don't know when that was done. It would be pretty difficult by looking through the reports to say whether they include the expense of taking off the collars and rethreading the test mile of National pipe that was laid and never went through the Crane Company at all. The field reports were sent in on the National mile just the same as the rest, but the national line was not taken up until we had finished taking up and relaying the Crane pipe that was laid before. I cannot say whether Kennedy's account derived from the field reports includes the National mile or not. There was a gang working south of Deep river and north, laying pipe at the same time. We had men screwing pipe, taking it up, uncovering it, and then taking off collars. It might be going on only a few hundred feet apart, or at different points. We tried to keep the men together as close as we could. It might be that sometimes they were six or seven miles apart. When the pipe was relaid we covered it up as soon as possible after making tests. If we found leaks we calked them and covered up the line. The bridge was built for the purpose of laying the new line, and taking up the old one. It is likely that the time of the men who were making tests at the Kankakee river upon the old pipe before it was taken up, was included in the field reports. The time would be short, only an hour in the morning, and perhaps an hour in the evening. In taking up and relaying pipe across the river, it was practically one operation. The field reports would enable anybody to distinguish between the parts of work done in unscrewing Crane collars and taking the pipe out for that purpose, and the work that was done in replacing them and covering it up again. I think I can always distinguish between the two, and that the reports show the amount of work they were doing on each kind. They are distinguished by the headlines, such as screwing pipe from such 340 a point to such a point, digging ditch from such a point to such a point, and the number of hours the men worked, and

so forth. One foreman is marked as taking up pipe, while another is putting it down. The distance north from Deep river was laid exclusively with Crane pipe to the state line. I can't tell how far beyond Deep river the line was exclusively of Crane pipe.

*Re-direct Examination.*

The three quarters of a mile of pipe that Mr. Quinn brought up from the National Tube Works was east of stake 127, near the highway, and near the farm of a man named Sheer.

(The map showing the position of said stake is offered in evidence as "Coyle recalled Exhibit 10;" and is as follows:)

F. P. LEONARD, called on behalf of the plaintiff, testified as follows:

I was in the employ of the Construction Company in 1890 and 1891, and have been in the employ of the company ever since. Referring to the paper which is marked for convenience "X Z," the items which I made in this examination are hauling pipe and collars, threading pipe, labor uncovering pipe, unscrewing pipe, unscrewing couplings, uncovering pipe and bridging. Referring to the paper shown to Mr. Kennedy, and which is marked Exhibit X, I say that Mr. Tobias went over the same with me to verify the labor shown by the report with the time books. Any discrepancy was noted as an over charge, and a credit given and marked "C C."

341 CLAYTON H. TOBIAS, called on behalf of the plaintiff, testified as follows:

I was in the employ of the Columbus Construction Company in 1891 and part of 1890, and have since been connected with their office. I was in the Ainsworth office three or four weeks in 1891. The field reports were made up there and signed by the foreman. They were made up every night. I have looked over the time books and pay-rolls, and compared them with the statements prepared by Mr. Kennedy. I did this in connection also with Mr. Leonard. I examined the sheet shown me marked X, and also identified by Mr. Kennedy as "Iden." The general items in the left hand column I compared with the time books and pay-rolls, that is, hauling pipe and collars, threading pipe, uncovering pipe, unscrewing pipe, unscrewing couplings, covering pipe, and bridging.

Mr. GREGORY: I will now offer this sheet giving a general re-

The exhibits 2 to 10 are summarized in Exhibit 1, which is as follows:

Freig

Mr. Gregory also offers in evidence a corrected memorandum as to the freight tendered by Mr. Kennedy, which document was marked "Freight Exhibit 1," and shows a total of \$24,448.89.

343 CHARLES E. HEQUEMBOURG, a witness recalled on behalf of the plaintiff, testified as follows:

I remember the fact that there was some negotiation between the plaintiff and the defendant with respect to the making of the heavy collar in 1891. The Crane Company sent a sample coupling of the kind that they proposed to make, which was rejected for reasons stated in a communication. They declined to furnish any couplings.

Thereupon the plaintiff rests its case, except as to witness on freights and certain correspondence.

344 JOHN E. SMALL, a witness called on behalf of the defendant, testified as follows:

I live at Deep River; am a barber and tobacconist. I saw gas pipe unloaded at Ainsworth in 1890. They put sticks in the ends of the pipe and lifted it out of the car on to the skids lying on the side of the gondola. They pulled the stick out and let the pipe roll down. I saw it two or three times. They would roll one piece down and let it lie there, and the next piece would come down and roll against it.

*Cross-Examination.*

I don't know whether they had ropes or not. I did not see any. I didn't see any men on the ground. I saw them using sticks and skids, but didn't pay much attention. I saw pipe strike other pipe when they went down and they made a noise.

SIMON S. SMALL, a witness called on behalf of the defendant, testified as follows:

I am a farmer and live near Ainsworth, and have lived there for thirty years. Saw pipe unloaded at Ainsworth in August and September, 1890. They used two skids on the car and let the pipe roll down. They had blocks down below and the pipe sometimes struck the blocks, and would shoot over on to the pipe. I didn't see any ropes used.

*Cross-Examination.*

I saw it just as we were passing by casually. The pipe on the ground was piled up, I should judge, 25 or 30 feet back of the railroad track. I saw this unloading only on two days.

345 JOHN CHRISTIAN, a witness called on behalf of the defendant, testified as follows :

I am a farmer and live in Porter County, Indiana, and have lived there since 1851. I saw pipe unloaded at Ainsworth in 1890. In unloading they used skids. Sometimes they pulled the pipe out of the car on to the skid with ropes and sometimes lifted it out with sticks. They let it go down the skids on to a plank, and rolled it out on to the pile. It struck the other pipe on the pile. I was there and saw them unloading parts of two days. Some made quite a good bit of noise like iron hitting together.

*Cross-Examination.*

Once in awhile, when a pipe hit that which was on the ground it would make a noise. In rolling down it just made a rumbling noise, but not to amount to anything.

WILLIAM WILSON, called for the defendant, testified as follows :

I live at Hobart, Indiana, near Ainsworth. Helped to unload gas pipe there in the Fall of 1890. Men in the car put rope under the pipe, pulled it up to the top of the skids, and let it roll down pretty lively. Occasionally there was a protector off. Where they let it roll down against the other pipe, where the protector was off it bruised the threads. I worked there ten days unloading pipe. I hauled some pipe south of Deep River, and helped to load it on the wagons. At first it was pulled up on the wagons on skids, and dropped on to the bolsters. In unloading the men got hold of the back end of the pipe, bore down on it, lifted the front end up on to the wheels and then would lift the back end out and roll it off on to the ground. They generally unloaded on one side, sometimes on both. Occasionally I heard a noise result from the pipe being rolled off the wagon in that way. I don't recollect that Levi Frame worked at Ainsworth unloading pipe.

Wilson. Sometimes the pipe rolled sixty or seventy feet on the ground away from the end of the skids. They generally used a piece of car stake between the pipes to prevent them striking. I saw some of the thread protectors come off as the pipe was rolling down. Sometimes the sticks used to prevent the pipe from striking, got broken. I saw instances where the protectors fell off after the pipe got on to the pile and bruised the thread. I made no effort to prevent it. I saw that as many as three times. I did not examine every time to see whether the thread was bruised. I have no distinct recollection how many times I looked to see. Generally four, sometimes less, were engaged in unloading. I took no pains to prevent the pipe from striking when it was unloaded. I never paid any attention as to whether the threads spoiled by the manner of unloading the pipe. It was not my business. I took pains to replace the thread protectors before the pipe was loaded. Might have hauled out two or more pipes which did not have thread protectors on; can't say how many.

Never told any of the officers of the Construction Company how the pipe was being handled. Don't remember that Button corrected us for unloading the way we did from the cars or wagon.

CHARLES KLEINE, a witness for the defendant, testified:

In 1890 I lived near Ainsworth; was a farmer, and helped to unload pipe from the cars. Skids were put against the car and ropes around the pipes to pull it on top of the car, and then the pipe was let go. Sometimes there were small pieces of wood, board or scantling put at the bottom of the pile when the pipe would hit them and fly over on to the pile. Sometimes the pipe would go down straight, and sometimes not. I never examined very close to see if anything happened to the pipe when it struck. Helped to unload pipe off the wagons in the field at Deep River. The first two joints rolled, were rolled or dropped down off from the wagon to the ground. The others were lifted and thrown off one end at a time. They unloaded mostly from one side of a wagon.

*Cross-Examination.*

It was my duty to put the ropes around the pipe in the cars. All the pipe was pulled up on to the skids with ropes while I helped. After the pipe was on the skids, we did not use the rope. It rolled down the skids pretty rapidly. It rolled back about forty feet to the fence at first. They put pieces of wood between the pipe if they could do it. They had nothing on the top layer of the pile for the purpose of rolling the pipe on. It was just jambed up on to the pile and rolled back. Think three, four or five men helped to unload the wagon, think it was five. Each length of pipe weighed 600 to 700 pounds. Helped to unload twenty-five to thirty wagons a day. We let it go off the wagon whether it struck the other pipe or not. Suppose we could have prevented the pipe from striking. But there were no orders to do so.

DECEMBER 8, 1897.

CHARLES BARNEY, a witness for the defendant, testified:

Have always lived in Lake County, Indiana; am a farmer. Worked for the Construction Company in 1890, 1891 and 1892. In 1890 hauled pipe from Ainsworth, commencing at Deep River, on the West side of the bank. In unloading the cars while they were full the pipe was rolled on to the skids. Afterwards it was lifted on to the skids with ropes. They let it roll right down. It went pretty fast, sometimes would roll off the skids and whirl around and bound on to the pile. Saw that some of the threads were jambed, battered down. Some of the protectors were off. Every two or three wagon-loads, there would be some rings off. We could hear the pipe being unloaded from the cars, a mile away.

After the pipe got to be two or three feet high there were 4 x 4 pieces of wood laid against it. When the pipe struck, if the pieces didn't break, it rolled on top of the pile where there were boards so as to let them roll back. In unloading the pipe in the fields, we generally put a stake into the front end, and raised it up to the stake or wheel, and let down the front end, and then lifted up the hind end, on to the wheel, and threw it off. We unloaded sometimes on one side and sometimes on both sides of the wagon. It was a double string of pipe. When unloading on one side, we calculated to throw the second pipe over, but sometimes it would fall on the first pipe. Know of three piles in the field. We drove up with the wagon and threw it off on to the pile as we would a load of wood. While I was unloading at the river bank, they rolled the pipe down into the spongy marsh, and a team snaked it away. They laid pipe for



skids down the hill, and let it go without using any ropes. The bank was pretty steep. It was rolled down faster than it was drawn away. Have seen some of the plaintiff's employes lying alongside the road drunk. In 1891 I saw a small quantity of pipe unloaded. The second year they had a rope fastened to the car and put it around the pipe, and let the pipe down easy. Only saw them unloading two loads then. Out in the field the second year we had to pick up the pipe and let them down carefully. Never saw Levi Frame working at Ainsworth.

*Cross-Examination.*

Once in a great while the protectors came off as the pipe rolled down the skids. They did not come off until the pipe struck the other pipe at the bottom. There was only one place at Ainsworth, where the pipe could hit any stones when it came down. Probably saw two or three loads unloaded where it could strike stones. At Ainsworth the soil was clay; there was nothing on it. The pipe rolled out on to the ground to the fence from forty to sixty feet. 349 There were pieces of wood 4x4 laid upon the first tier so that the pipe could roll up on to the top of the pile. Generally they put boards on top of the pipe on the pile so it could roll back, not always. There were woods close by where they got the skids and saplings. The only time I ever saw that the threads were jambed was when we were loading on the wagon. Saw only two or three flattened pipe. Some of the threads looked as if the pipe had been dragged and some as if they were mashed down. Don't remember noticing more than three or four cases where the threads were flattened down. Saw a great many threads that were jambed by sliding or raking them down. Never saw more than two of three rings fly off whilst the cars were being unloaded. One or these rings fastened together with a sort of snap and a little piece broke so that it flew off. The other ring was lying there. Didn't see it fly off. Saw it was broke, but didn't pick it up. When we were hauling with wagons, sometimes we screwed the protectors on which were off. We had orders to screw them on, but sometimes there were not enough. We hauled some pipe before the ditch was dug, and some where they were ditching. I think that was in Chester's woods. After the first pipe was rolled off the wagon on one side, it was not rolled away before the second was rolled off. Sometimes I helped to unload when they were short of hands. Don't think I ever helped to unload more than one load. The bank along the river where the pipe rolled down is about fifteen feet high. Down this bank the right of way was about sixteen or eighteen feet wide. The timber had been cleared off of the right of

way. Don't remember seeing any stumps there. There was a stump on this river bank in the right of way. The pipe rolled pretty straight until they struck the stump, then they would bound and swing around lengthwise on the hill. From the bottom of this river bank, it was ten or fifteen rods to the ravine that I spoke of. The ravine was ten or fifteen feet deep and eight or ten feet wide at the bottom. During the week or ten days I worked in 1891, saw them unloading pipe from the cars at Ainsworth with ropes. When we threw it off the wagon on to the ground and dropped one pipe on another, don't think it could be heard very far; it wouldn't make much noise. In 1891, they made no noise unloading pipe. Wouldn't have known it was being unloaded, except for seeing it.

THOMAS S. CASBON, a witness for the defendant, testified:

Live near Deep River. Worked for the Construction Company in 1890, hauling pipe from Ainsworth to the line. The pipe were lifted up on top of the skids and let roll down. They were pulled out of the bottom of the car by rope on short skids to the top of the car, and then the pipe rolled down the skids pretty fast. The noise made by striking at the bottom was pretty loud. Didn't see Levi Frame unload Pipe at Ainsworth in 1890. In hauling pipe on the wagons, most of it had rings or protectors—some few did not. We tried to put some of the rings on, but couldn't on account of the threads; they wouldn't catch. We unloaded pipe in the field by rolling off the top ones, then drove up the wagon, lifted the front end of the pipe up, and then the back end on to the wheel, and throw it off. Sometimes it wouldn't get far enough ahead and would strike the other pipe—not very often. Unloaded most from one side of the wagon. The pipe was strung in double line. In 1891, pipe were taken off carefully from the wagon; sometimes with skids and sometimes without. When we hauled pipe from the field to the thread mill in 1891, some of the threads seemed to be all battered up. In 1890, could hear them unloading pipe at Ainsworth, a distance of two miles.

#### *Cross-Examination.*

We unloaded from one or both sides of the wagon, just as we were ordered. We endeavored to avoid letting one pipe strike another, but it sometimes did so. In unloading we rolled

351 the first pipe back from the wagon, and then put the other beside it. The pipe was hauled to the thread mill in 1891, was hauled for the purpose of having the ends cut off and new threads put on. In 1890 our orders were to throw the pipe off, and we threw it off. We were not told to smash the threads, but did as we were told. It hit pretty hard sometimes.

Re-direct Examination.

Saw pipe bent in 1890. It was screwed together and the men jumped on one end and bent it to the ground. Saw no heat used. Saw this twice. The next year the pipe was heated before being bent.

of  
Larson.  
LOUIS LARSON, a witness called for the defendant, testified:

Am a farmer; lived at Ainsworth in 1890. Helped to unload and haul pipe. Worked on the inside of the car one day. We lifted the pipe out of the car on top of the skids and let them run down. There was some noise. Didn't see anything happen when the pipe struck the other pipe at the bottom. Never examined. Hauled to Deep river from Ainsworth. The pipe were loaded on to the wagon by lifting one end first, and then the other. At first the pipe were lifted off the wagon, that is, the hind end was lifted on to the hind wheel and let rest while the front end was lifted off on to the ground, and then the hind end was pushed off. Sometimes we put a pole between the hind wheels and lifted the pipe up on to the pole and then lifted the front end off on to the ground, and let the hind end fall off. Where there was room, we unloaded from each side of the wagon; where there was not, from one side. The unloading made no noise to speak of. Occasionally a protector was missing. We simply loaded the pipe without putting it on. Never saw any of the protectors knocked off.

352 LAWRENCE CASBON, a witness called by defendant, testified:

In 1890 I lived at Deep River and was a farmer. Hauled pipe for the Construction Company from Ainsworth to the right of way at Deep River. Pipe was unloaded from cars by being pulled out on top of the skids and then let roll down to the pile. I heard the noise a mile away. In unloading the wagons, the top

pipe was rolled off the top while the others were raised up and a stick put across the wheels, the pipe loaded on it, and then rolled off, sometimes lifted off, one end at a time. Never saw Levi Frame working at Ainsworth. Never saw a protector come off while pipe was rolling, but saw that pipe had none on. Saw some pipe with bruised threads. Saw them bend pipe. They put a log across the ditch, and laid the pipe on top of it, and the men got on the other end and bent it down to where they wanted it. Saw that two or three times. Hauled pipe for the same company in 1891. They were taken off the wagon and laid down with care so as not to strike each other

#### Cross-Examination

In 1891 some of the pipe which I hauled to the thread mill had thread protectors on. Didn't see any stripped threads the first year. In unloading pipe from the cars it generally rolled up on to the pile without any assistance from the men. There were sticks or skids set up for the pipe to roll on to the top of the pile. There were boards laid on top of the pile for it to roll on. The sounds made by unloading from the cars I have heard from one to two miles. Nearly every pipe struck the pipe rolled off ahead of it. It would first strike the skid and run up on the pile, and strike the other pipe there. Most of the pipe would run up the skids on to the pile. If it got too high, they would not. Am a brother of the witness, Thomas Casbon. Where there was  
353 no ditch we usually unloaded from both sides of the wagon.

About half the time we unloaded from both sides. Some of the thread protectors had paper or paste-board on the inside.

LOUIS TELLKAMP, a witness for the defendant, testified:

Worked for the Construction Company in 1890 unloading pipe from the cars and loading it on wagons at Ainsworth. Didn't see Levi Frame working there. The pipe was lifted out of the cars on to skids and let roll down. Skids were eighteen or twenty feet long, and the car eight or ten feet high. Sockett, collar and coupling mean the same thing

*Nicholas.* AARON NICHOLAS, called for the defendant, testified:

Lived in Valparaiso in 1890 and worked for the Construction Company unloading gas pipe from cars and loading it up in wagons at Ainsworth. The pipe was pulled up out of the cars on to the top of the skids and then let roll down on to the ground. The pipe hitting each other made a noise something like shooting cannon. Sometimes thread protectors were knocked off in unloading.

Cross-Examination.

Once in a while one of the pipes would go up in good shape, but the majority did not. Sometimes they rolled up on the pile on skids, and then rolled back. I was not noticing this matter with much care. It did not leave a distinct impression on my mind.

JOHN GOERTZ, a witness for the defendant, testified:

Unloaded gas pipe for the Construction Company at Ainsworth in 1890 for ten or twelve days. They let the pipe run down skids from the cars. Saw one protector off the pipe. The pipe was bent in. No ropes were used while I was there for any purpose. Mr. Smith measured the pipe in the car with a tape-line, and set down the result in a book.

354

Cross-Examination

Saw broken thread protectors on the ground, but could not swear I saw them fly off. The protectors were not lying on the ground; they were broken off and set on the pipe. Saw one pipe without a thread protector. Saw about three thread protectors on the pipe which were broken, but did not come off as far as I know. Sometimes they had blocks so that the pipe would not strike when it came down, but it came with a rush and a man could not stay there without getting hurt. Sometimes the blocks or sticks would fall away, and then the pipe would strike. Sometimes the pipe had boards upon it, and sometimes not.

December 9, 1897.

PETER CROWLEY, a witness for the defendant, testified:

I live at Toledo, Ohio. Have been familiar with the business of unloading eight-inch gas and oil pipe for about fourteen years. Have seen a great deal of it unloaded. The customary or usual way of unloading gas pipe from cars is to put two skids from the cars down to the ground; then lift the pipe out of the car with handspikes on to the top of the skids, and let it down the skids with rope, one end of which is fastened to the car and the other is held by men. One piece rolling down the skids is not allowed to strike another at the bottom. If the pipe is allowed to roll down the skids and strike at the bottom it would have a disastrous effect on it. It would jamb the threads of the pipe, and might loosen the collar. In the year 1890, was in the employ of the Columbus Construction Company, and was at Tolleston while all the pipe was unloading there. The pipe there was unloaded by taking it out of the cars and letting it roll down the skids without ropes. Morton seemed to have charge of it. I told him he was spoiling the pipe by unloading it in the way he did, and he said his instructions were to unload it as quick as possible, and I told him he was doing it. They used telegraph poles for skids. There was only one pile of pipes there. Saw pipe unloaded at Ainsworth; think Button had charge of it. It was unloaded there the same way as at Tolleston. Also saw pipe unloaded at Liverpool. There was a switch there and it was dug away so that the ground came nearly level with the top of the car. The pipe was rolled off the car on skids. Had charge of digging a trench and putting the pipe in at Deep River. The ditch was three feet deep, and three and a half feet wide. We put in both lines. After it was put in, think the center of the joint was covered a little. The collars were left bare. Sometimes there would be a mile or more screwed together outside of the ditch before it was put in. It laid there sometimes from four to six days. Before 1890 had but little experience in screwing and putting together eight-inch pipe, but had considerable with six-inch pipe. Had had fourteen years' experience in screwing the pipe preparatory to laying it in Pennsylvania. Cross-threading would have had bad effect; it would produce leaks. Can tell from looking at the pipe as it lies on the ground screwed together whether it had been cross-threaded. It would show in the collar if it was crooked. Was present when this pipe at Deep River was put in the ditch, except at the road crossings.

There were several places where I saw that it was cross-threaded. The cause of being cross-threaded was because it was not started straight in screwing it together. There should be experienced men in charge of the stabbing. After the air pressure was put on at Deep River, Mosier directed me to investigate for leaks. Examined the leaks from Deep River to the end of the line and gave my report to Mr. Mosier. Did not use water or soap suds. Discovered the leak by hearing the sound. Found most of the leaks on the field end, and so reported to Mosier. Where the joints were spliced at the mill did not find any leaks at either end of the collar. The pipe east of the pumping station was laid by hand, to the west or northwest partly by hand and partly by machine. I was there a few times when they were putting in the pipe with a machine, but did not observe any instances of cross-threading. I covered the whole line at Deep River except the road crossings. Saw instances of cross-threading on the line northwest of the pumping station. The men who were screwing the pipe together were drunk a good deal of the time. James Sheehan was the boss over that gang of men. Told him he would have to discharge them because we couldn't get along with them at the barracks, they raised so much disturbance. They were intoxicated on working days and other days. Mr. Sheehan used to take his booze pretty regularly. The pipe was bent hot part of the time and cold part of the time. In order to bend the pipe over a knoll, it had to be raised up at least six feet back from the collar and put on top of the jackpin. Then the joint reaches out eighteen or twenty feet. Tongs are put on the end of the joint close to the collar on each side to keep the pipe from rolling, then seven or eight men get on the end of the pipe, and bear down on it and thus bend it. That is the way I saw it done. Didn't notice whether the threads in any way had been pulled out of the collar where the pipe had been bent in this way. The bend in eight-inch pipe cannot be made safely without heating. In screwing together pipe, we generally used to use red paint and linseed oil.

#### Cross-Examination.

Prior to 1890 had nothing to do with the laying of any eight-inch gas pipe. Had charge on inspecting the line thirty to forty miles long, running from Ludlow to Cory, Pennsylvania. Unloaded some of that from cars. Common sense and reason will teach a man experience. Didn't have any knowledge of unloading any eight-inch pipe except the twelve or fifteen cars at



Warren, Pennsylvania. Did have experience in unloading six-inch pipe prior to 1890 at different points in the oil country. Tes  
P

The twelve or fifteen cars were unloaded with ropes. Have  
357 had experience in putting the pipe in the ditch before 1890.

The method I used in doing it at Deep River was about the best I knew, and the one always used. I put the pipe down in good shape. Didn't strain any of the joints. It was customary to screw it on the bank and then put it in. The other method is to screw it together immediately over the trench and let it down as it is screwed together. I dug all the trench along Deep River except the road crossings. It was dug after the line was screwed together. The line did not leak so very bad, not much more than the general run of pipe. It is not an uncommon thing to screw pipe together cross-threaded. I think there was a little more in this than common. It looked more than the general run of pipe on account of cross-threads. I never saw pipe screwed up all the way cross-threaded. Had no other means of determining whether this pipe was cross-threaded than by looking at the line as it lay. The threads were screwed up all the way. You can't start pipe cross-threaded in a collar. It gets cross-threaded by letting the jack drop. Think there were as many as 150 joints screwed up cross-threaded; there might be more or less. The only way I could tell the joints were cross-threaded was because the pipe was crooked in the collar. Didn't see any of the threads sticking out on the side. If screwed cross-threaded, and if the pipe was crooked in the collar, the threads would not be visible on one side or the other, because the thread strips as the pipe goes up. Saw the cross-threading when I walked over the line before it was put into the ditch. Thought they were pretty bad joints. Don't recollect whether I said anything to anybody, but I put it in the ditch. Our instructions were to put it in as fast as possible, and get the joints out of the sun. They were pretty bad leaks that I saw down there. They made a good deal of noise. You could hear some of the leaks eight or ten joints of pipe away; at least two hundred feet. These leaks were in the collar. A good many of them made a whistling sound.  
358 Have no idea as to the whole number of leaks on the south-east end of the line which whistled, but there were quite a great many. In the memorandum which I gave Mosier, I did not discriminate as to the character of the leaks, nor as to the location. Reported just what I heard and saw; that is by what I heard; could not see very well. Didn't examine any leaks which I didn't hear. What I saw was that the dirt was blown

away sometimes; saw a good many leaks of that kind. Sheehan was foreman over the gang. Don't know that I saw him drink in the gang, but saw him under the influence of liquor in the field. He was intoxicated a good deal of the time he was working. He said he was his own boss, and could do as he pleased. These men were in the pipe-screwing gang. Never saw them use ropes for any purpose in unloading pipe at Ainsworth, nor at any of the other places. Never saw a collar loosened where the pipe came down the skids so that it struck other pipe. My judgment tells me that it would loosen it. If the pipe had on it sheet iron and paper protectors, the threads would be bruised by the pipe striking together. Never saw any threads bruised after the protector had been knocked off by rolling down. Never saw any threads on the inside of the collar bruised by the collar striking. Saw bruised threads on the pipe at Ainsworth and Tolleston, but don't know how they came to be bruised. Saw Mr. Hequembourg at Deep River both before and after I saw the leaks. Didn't discuss the question of leaks with him at all. Either he or Mr. Smith asked me if there was any such thing as laying an absolutely tight line with screwing pipe, and I told him it was never done, and never could be done, and I don't believe it ever will be. Saw ropes lying at the three places where I saw pipe unloaded from the cars, but they were not in use.

359 CHARLES CASBON, a witness called for the defendant, testified:

Lived in Valparaiso in 1890. Was hauling pipe for the Construction Company from Ainsworth east and west on the line. Saw pipe unloaded at Ainsworth. They lifted the pipe to the top of the car on skids and let it go. The first ones that went out on the ground rolled back to the fence. As they continued, the pipe lay closer to the cars. They struck together and made a ringing noise, and sometimes jumped over each other endwise and crosswise, so that they had to straighten them out. Don't believe I remember that I ever saw any of the thread protectors come off. Saw quite a few of the protectors lying on the ground. Could hear the noise a mile and a half. In unloading from my wagon they lifted the pipe on top of the wheels and pushed it off and let it drop. At first they unloaded on both sides of the wagon, and afterwards on one side only. Never saw Levi Frame unloading pipe at Ainsworth. When I was hauling pipe

out to Chester's farm, saw them rolling them down the ravine on skids sometimes. They just let them go. There were always some pipe lying at the bottom of the hill. They used a horse to snake them away. Think the ravine was thirty or forty feet deep. It was quite steep. The men who were screwing and laying this pipe were what I would call a drunken set. Have seen them lying along the line. When pay-day came most all of them got drunk. Was not personally acquainted with the men, and would not say that I ever knew of an instance where on work days these men were unfit to work on account of being drunk. Saw them bend pipe in 1890. They screwed it together and got on the end and bent it down. They had tongs, too. It was bent cold. There were a good many bends, large and small. In 1891 saw them bending pipe by first heating it.

360

*Cross-Examination.*

Saw Harper in the car measuring pipe. Don't think he was there all the time. He measured it before it was unloaded from the cars. The pipe rolled down the skids and up on the pile. There were no boards or anything around there; it would smash them if there was. The piles were sometimes six pipes high. When they rolled it down the skids it would strike the ground and bound on top of this pile. Don't remember that I ever saw any protectors fly off. Some of them were off when we loaded pipe on the wagon. We tried to screw some of them on. If the threads were battered too much we could not, and let them go. The first day or two we unloaded from the wagon on each side, and they had orders to put both pipes off on one side. Think Button gave the orders. The ravine that I was speaking of is probably three or four rods wide. Don't think it was more than once at that place where I saw them roll pipe down. The pipe didn't make much noise while rolling, but cracked together pretty loud at the bottom when they struck each other. Know they struck because of the noise. It didn't make so much noise as the unloading at Ainsworth. There was a stump in the side of the ravine which stuck up a little above the skids. The pipe gave a little jolt as it went over the stump. Could not say I saw the men have more than one keg of beer. Don't know whether that was on Sunday or not; knew it was in the afternoon; think they were paid off in the forenoon.

J. D. COUFFER, a witness called out of order on behalf of plaintiff, testified:

Am clerk of the General Western freight office of the Pan-handle railroad. Have been since 1886. Was familiar with rates of freight in 1891 as compared with 1890. The rates were the same. The classification was the same. The rates east and west were the same for 1890. The freight tariff on the Pittsburg, Ft. Wayne and Chicago, and the Pan-Handle roads was the same. All rates out of Pittsburg were agreed to by the leading trunk lines, and the class and commodity rates were the same. Remember that the Columbus Construction Company had a large amount of freight over our line during that period.

WILLIAM POTTER, a witness called for the defendant, testified:

In 1890 I lived at Ainsworth, close by the station. Saw gas pipe unloaded there in 1890. After putting skids on the sides of the car they pulled the pipe out of the car on to the skids with ropes and let them roll down to the ground. The pipe made a good noise when it struck at the bottom, which it did quite frequently. Some of the thread protectors were made of sheet iron, with paper underneath. Some of the protectors came off and lay around the yard. The noise could be heard a couple of miles. In making a pile after making one tier they put skids on the pile and let the pile roll up on them. Saw two loads unloaded at Sedley either in 1890 or 1891. They were unloaded the same way as at Ainsworth. In 1891 saw them unload pipe at Ainsworth by letting it down the skids with ropes. In 1890 saw that some of the threads on the pipe were jambed. Some of the fence posts were broken by the pipe rolling against them. Never saw Levi Frame working around Ainsworth. Saw him talking there one day with Mr. Button.

#### Cross-Examination.

The first day saw them unloading pipe at Ainsworth there were four men on the car and six on the ground. There were no ropes used that day at all for any purpose.

362 ELIAS T. PHILLIPS, a witness for the defendant, testified: Te

In 1890 lived in Porter county; was farming there. Also hauled pipe from Ainsworth for the Construction Company. In unloading from the cars they rolled the pipe out to the top or side of the gondola and let them down the skids without ropes. They made a great noise which sounded more like an iron foundry than anything else. Suppose the noise was the result of their striking together on the ground. Never saw anything happen to the protectors. Saw some lying on the ground. Could hear the noise a couple of miles. Never saw Levi Frame working around Ainsworth unloading pipe. In unloading we sometimes put the pipe off on each side, usually on one side only. In unloading we lifted first one end of the pipe and then the other, and let it roll off on to the ground. Sometimes it struck the hub of my wagon. After unloading two, the team was driven up and two more unloaded, so that they would lap about enough to screw together in the collar. In 1891 I hauled pipe from Valparaiso. They were unloaded carefully, sometimes with skids. In 1890 saw them bending pipe after it was screwed together. They put a handspike across the ditch and let the pipe rest on top of the handspike, and then teetered the pipe up and down so as to bend it. There was no fire there. In 1890 noticed one thread battered up, a little chunk was broke out of it. That was all I saw.

#### Cross-Examination

When we first hauled and unloaded on each side of the wagon the ditch was not dug. When the ditch was dug they put them both off on one side. Hauled pipe in 1891 after the ditch was dug. Did not unload any pipe after the ditch was dug in 1890. The reason for unloading on both sides of the wagon instead of one side, in 1890, was not because the ditch had been dug. 363 The reason was because Button or some other man told me to do so. Don't know as I ever talked with Button about it. Somebody in authority told us to unload both pipe on one side, but don't know who it was. At that time the ditch was dug, and the ditch had been dug. Only noticed one thread with a nick in it. Don't know how it happened. The place where I saw the pipe bent was two miles or more from the pumping station at Ainsworth. It might have been three miles.

CONRAD F. KRAMER, a witness for defendant, testified:

Hauled pipe for the Construction Company in 1890 from Ainsworth. In unloading pipe from cars they rolled the top layers off on to the skids and let the pipe run down the skids. When they got lower down they pulled the pipe up to the top of the skids with ropes and then let them run down the skids on to the pile. I unloaded from the wagon on one side. Could hear the noise of unloading from cars a couple of miles. Saw some of the protectors off the pipe lying about the pile. We put the protectors on the wagon and hauled them out. Never saw Levi Frame unloading pipe at Ainsworth in 1890.

Cross-Examination.

Saw them use ropes sometimes in unloading pipe, but did not examine to see how the rope was wound around the pipe. There were boards on the ground for the pipe to roll on. After the pile was built up a little, they used skids to roll the pipe on top of the pile. Sometimes it rolled down the skids and clear up over the pile. Sometimes the smaller skids broke and the pipe went up on the pile crooked. We unloaded the pipe all on one side of the wagon, because they were digging the ditch. In unloading we raised the pipe up on the wheel, put a skid under it and held it while the other man went to the front and raised  
364 that end up and then let it go down over the wheel. We did not care whether we injured the pipe or not.

SYLVESTER CASBON, a witness for the defendant, testified:

Casbon.

Am a farmer, and visited Ainsworth in 1890, once in a while, and saw them unloading pipe there twelve or fifteen times possibly. They lifted the pipe out of the cars on the skids and let them roll down without using ropes to ease them down. They pulled them out of the car with ropes. The pipe went down the skids "for all that was out." Could hear the noise a mile or two. Did not notice the effect on the threads. Saw the men once bending pipe at Deep River. After it was screwed together there were probably fifteen or twenty large stout men got on the pipe and sprung it down without using heat.

## Cross-Examination.

I am the father of the three witnesses named Casbon. When they commenced building the pile the pipe rolled back in the fence. After that they used pieces of scantling, or stakes, which were put up against the pile, and the pipe in rolling down struck these pieces and went clear over on to the pile. The small pieces of wood or skids were close to the longer skids coming down from the car. Did not see any boards on top of the pile of pipe.

December 10, 1897.

CHARLES OLS, a witness for the defendant, testified:

In 1890 lived on a farm near Ainsworth and unloaded pipe there for the Construction Company. The pipe were pulled out on to the skids with rope and let roll down the skids. They went down the skids very fast and rolled toward the fence. It made a roaring noise as the pipe bumped together. Saw thread protectors burst into as the pipe rolled down and struck. Once in a while saw the collars fly off when they struck the pipe. They were the big collars. Levi Frame did not work there in 1890. Unloaded pipe also in 1891 at Whiting. At that time they were let down easily with ropes. In 1890 saw that the threads were smashed down, flattened down. It was where the thread protectors were off. Worked out in the field half a day at Chester's Hill rolling down pipe. It was sixty or seventy feet from the top to the bottom. They used two rows of pipe for skids. The rest of the pipe was rolled down on the skids to the bottom. The pipe rolled down the hill was laid in the river bottom. Should judge the bottom was 100 rods wide through there.

## Cross-Examination.

The collars did not come off while the pipe was going down the skids. It was when one pipe struck another that they came off. Collars were loosened going down, not many of them came off. Don't know how the collars were screwed on. Examined some of them before they were rolled down. Some of them, a few, were not screwed on tight, one or two possibly out of every carload. Saw a dozen or more protectors in a carload broke when they struck the other pipe. Some of the protectors were made of hoop iron, with paper underneath. I looked at some of the



threads when we had a car unloaded, and were waiting for 366 another train. The threads were mashed when they came down, when they struck. There were a good many thread protectors lying around on the ground. There were small skids on which the pipe ran up on to the pile. Sometimes there were boards or something on top of the pile, sometimes not. I think two or three collars came off in every carload. It was Button who told me to go out to Chester's ravine and roll pipe down the hill. There was a stump nearly at the foot of the hill. It was swampy at the foot of the hill. They had cut the trees away. This stump was on one side of the piece used for skids, not between the two. Sometimes when the pipe struck it it would roll off the skids and have to be lifted up and put on again. The surface of the ravine was not so rough that the pipe had to be blocked up for skids.

HENRY LEMKE, a witness for defendant, testified:

Live at Ainsworth, Indiana. Am a farmer. Worked for the Columbus Construction Company in 1891. At first was handling pipe with machine. Was helping to re-thread pipe. I run one of the machines about six weeks. When the pipe was brought to be re-threaded we took off some of the collars with the machine, and some with tongs, and those that we couldn't get off we cut off by machine. We cut off the end of the pipe which had the collar on and re-threaded that end of the pipe. When the thread was bad, we cut off as much of it as was bad and put on new thread. Some had to be cut off entirely. Sometimes three or four threads were torn out all the way round. Do not think that was the result of cross-threading. Think it came from screwing them up too tight. Was hired to work by Mr. Hoover. We generally turned from ten to eighteen pipes a day. Think I could tell when working there whether the joint had been cross-threaded. Think one-tenth of the pipe which we re-threaded had been cross-threaded. After it was re-threaded we put protectors on one end and collars on the other. The platform was about as high as the wagon, so that we put skids from the platform to the wagon and rolled the pipe out on to the wagon after it was re-threaded. There was a collar and protector on them, they put nothing between the pipes and the wagon, but when there was no protector on, they put ropes between. The pipe we re-threaded had been covered by dirt apparently.

When they brought pipe in to be re-threaded they just threw 367 them off the wagon on top of one another. Part of the time there were four threading machines running, part of the time only two. Mr. Hoover was the only man in charge. He was there in the morning and told us what to do and sometimes he came in the afternoon again, sometimes not until the next morning.

#### Cross-Examination.

After we re-threaded the pipe we screwed on heavier collars than the old ones. There would be three, four or five threads in the middle that were cut out or battered down. From my experience, think that was produced by cross-threading. Don't think a joint cross-threaded could be screwed up all the way.

#### Re-direct Examination

Saw them calking down by the station at the mill; that's the only place. We sent out spliced joints from the threading mill. We sent out some short pieces of pipe two feet long. There were not many of them. The general length of the pipe was eighteen to twenty feet; some were twelve or fourteen. The short ones were for some special purpose. We cut them off according to orders.

WALTER DIETZ, a witness for defendant, testified:

Live at Deep River, Indiana. My trade was butter and cheese maker. Used steam in my creamery running machinery, and so forth. Run the engine myself. Never worked in a regular machine shop except at the pipe shop at Deep River. Helped to put up the pumping station for the Columbus Company, and the machinery. I fired the boilers for the engine there. The high pressure engine was 200 horse power. Think the low pressure was the same. In the fall of 1890 the ditch on the south-east part of the line was filled up as far as the pipe was cut in. At the time that the calking was done there there was a little dirt over the middle of the joint. During the fall the ditch was filled up level. The next season the pipe was all taken out at that place. At the time the test was made, in 1890, I did the firing. Helped to build the re-threading mill. I ran one of the machines from September until about December, steadily. The indications showed that some of the pipe that we re-threaded

had been crossed-threaded; they were stripped. Others 368 were dented. Once in a while there was a sand hole, or weld was not perfect. Some of the pipe were bent. When the pipe was brought for re-threading we took the collars off, if we could do so. Some were so tight we couldn't take them off, and had to cut the pipe and re-thread it. After it was re-threaded we put collar on one end and a protector on the other, and it was then hauled back on the field. When the pipe was brought in from the field to the threading mill they were not careful about unloading it. Think some of the threads were broken or bruised in unloading.

#### Cross-Examination.

Could not say for sure that it was done by throwing off the wagons. Part of the pipe, the threads were bruised so badly that there was actually no thread on at all. It was stripped off principally from the heel outward toward the end, half way down the thread sometimes. Thought that stripping off or battering down at the heel came from cross-threading. The sand holes that I speak of were in different parts of the pipe, not in the thread. As to size, should say an eighth of an inch would be a big estimate. Don't remember of seeing more than one of them in a length of pipe. Don't think we found more than one sand hole in fifty lengths of pipe. There were some imperfect welds in the body of the pipe. Some of the collars had been calked, the iron was driven down around the pipe. Don't see that they came off much harder than the others, probably a little harder.

D. E. LYON, a witness for defendant, testified:

Have been president of the Pittsburg Tube Company since 1886. Made a verbal contract with Crane Company in 1890 about furnishing pipe for this gas line. My talk was with Mr. Forman. We were to furnish forty miles of eight-inch standard line pipe, merchantable, free from large blisters, to be tested to 1,000 pounds to the square inch, and was not to be refused if it weighed within two and a half per cent of the standard weight. On the printed list the nominal weight is 28.88 pounds. The price was to be 88½ cents per foot, and we were to pay freight to point of delivery, settlements to be made monthly for all pipe shipped during the preceding month. We were to make 369 delivery as fast as we could. Agreed to put one of our furnaces on this contract, and make no other pipe in that

furnace. The contract was closed July 2d. My interview with Forman was on the 1st, and his proposition was accepted by wire on the 2d. After the interview, we placed our orders for iron; in fact, we had some options on iron the day before, in anticipation of getting the contract. I mean we bought iron from the rolling mill with which to make the pipe. We made and shipped about seventeen miles of pipe and contracted for forty miles. We were paid for the amount shipped by Crane Company. Made five miles more than seventeen, but stopped in October. When we stopped, there was on hand a large quantity of couplings in various stages of manufacture. They were being made to fulfil this contract. Some of them we shipped to Chicago, the first in May, 1894. In October we shipped twelve, and in November, twelve more. I personally inspected those shipped in October and November. Those shipped in October I saw marked with a steel stencil, and some of them were marked by myself. When I was here in December, 1894, when this case was on trial, I testified as a witness. Saw eleven of the couplings in a line of pipe twenty-five or thirty feet long. Saw one in the court room cut open, showing thread and taper, which I then identified. At the time we stopped manufacturing, we had some pipe and couplings and iron on hand. The pipe was sold in 1891: the couplings were sold a little more than two years ago, and the iron was sold in 1891, in February, I think. We neglected no opportunity to dispose of these various things, at the best price. Can't recollect the particulars about our trying to dispose of them. We sold the couplings to the Pennsylvania Tube Works. Think there were about two hundred and twenty finish and eighteen hundred or nineteen hundred blanks. We obtained 56½ cents for the finished ones, and 52 cents for the blanks. We sold the couplings at \$1,082.03, under cost of production. We based our figures on the price of the material and labor, and had kept a detailed account in our office. We made a claim against Crane Company for the loss sustained, which claim has been paid. The loss was \$7,691.35, which was paid, and also interest amounting to \$3,333.25. The interest was computed from November 10, 1890. We would have been ready to ship the pipe on the contract at that time. It was the custom to charge for thread 370 protectors, and allow the same price when returned, the manufacturer repaying the return freight. Think I was acquainted with the movement of the pipe marked, and the conditions of production. In my opinion there would have been no difficulty after January 31, 1891, of procuring, to be made in the

market within a reasonable time, 154 miles of standard eight-inch line pipe, such as covered by my contract with Mr. Forman. Beginning with the 1st of February, we could have shipped ten miles of pipe per month for several months. The mills generally have not so many orders in their books in the winter months as in other parts of the year. One of the reasons is that pipe cannot be laid in the winter so well as in the summer.

A. M. GILBERT, a witness called for defendant, testified:

Was vice-president of Crane Company, beginning January, 1891, for nearly five years. Gave part of my time to that work from November, 1890. During that time I conferred with Mr. Yerkes, who, I think, was vice-president of the Columbus Construction Company. Our talk was concerning settlement for moneys due us for pipe. The amount was not far from \$70,000. My first interview I think was in the early part of December, 1890, in his office on North Clark street, in the offices of the North Side Street Railway. Before going there had examined the correspondence of the Crane Company with reference to this matter. Got no money at that time. Probably had two or three interviews during the next two weeks. In the early interviews, Yerkes gave as a reason for not paying that he wished to make further investigations, claiming that he was not familiar with the facts. He subsequently said he had received reports from his men on the line that more or less of the pipe was damaged, and gave that as a reason for not making payment. Don't think he stated specific damages. At one of the interviews reference was made by one of us to the pipe from the Reading mill. It had furnished a large quantity of pipe which was shipped to Chicago by rail from Reading, Pennsylvania, to Buffalo, and from there by boat. It was transferred at Buffalo, and again at Chicago, and in the transfer some of the pipe had been bruised, and we knew that fact, and admitted it to Mr. Yerkes. One of the principal men of the Reading Company admitted the damage, and wished us to take the pipe and put it in condition  
371 at their expense. I communicated this offer to Mr. Yerkes at one of the interviews. My statement was to the effect that the cost of the repairing would be a small proportion of the account that was due, and that if he felt any doubts on the subject he might retain that much money until the damage was made good. Am quite sure I told him the repairs would be made at our place in Chicago. Told him that the Reading people were

willing to bear the expense on all their pipe, and I believed that the other mills would do the same as far as their pipe was concerned. Gave him to understand that the expense would not have to be borne by the Columbus Construction Company.

We received a letter dated that same day from Mr. Yerkes (Dec. 31st.) Letter offered in evidence, which reads as follows:

Copy.

December 31, 1890.

The Crane Company, Chicago.

Dear Sirs: In accordance with the conversation with Mr. Gilbert, and my proposition to him, I formulate it as follows.

1st. You can remove to your works the pipe which has been condemned on account of bad threads and fittings; the same to be repaired and returned to us and placed in the same location as it now lies. The pipe, on receipt, to be subject to further inspection and approval. As the pipe is received back by us, on the statements of our inspectors, the same is to be paid for by us.

2d. The mills to commence delivering pipe to fill the balance of their contracts on the first of February, proximo.

3d. We to pay fifty per cent for pipe which passes inspection on the ground, and the balance—fifty per cent—immediately after the pipe has been tested in the line, at a pressure of not more than 1,000 pounds to the square inch. Said tests to be made at as early a time as practicable.

This proposition to be taken in all its parts as being combined, and not severally.

Yours truly,

CHAS. T. YERKES,

Vice-President.

372 I replied to that letter.

Reply offered in evidence, being letter from Crane Company to Yerkes, dated January 2, 1891, which reads as follows:

Copy.

January 2, 1891.

Chas. T. Yerkes, Esq., Vice-President Columbus Construction Company, City.

Dear Sir: We are in receipt of your favor of the 31st ultimo, and note all the contents.

The proposition therein contained is such a radical change from the contracts existing with the various pipe mills that it is our opinion that it is impossible to make such arrangements as you suggest.

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ed in

Possibly you could do better by seeing the parties yourself, and in this connection would say that the largest amount of pipe due from any mill is from the National Tube Works Company. They have a representative in this city, and if you can arrange with them to accept the terms you propose, it will thus provide for a large share of the pipe that you will need, and will very likely have more or less influence upon the other mills.

In order that there should be no prejudice whatever in this matter, we have avoided saying anything to the National's representative here upon this subject, and if you advise us that you would be glad to see him upon this matter, we would not propose to say anything more than was absolutely necessary in arranging for a meeting with you.

Will you please advise us by bearer if this meets with your views, and if so, kindly name any hour that will suit you to meet this representative of the National Tube Works Company.

Respectfully yours,

CRANE COMPANY.

P. S.—For the reason above mentioned, we think it most desirable to confer first with the National people upon this subject and have the question decided with them before we say anything to the other mills.

If you can take up the matter with them, we will await the 373 result of your conference; or if you prefer to have us negotiate with them we will await your advice to that effect.

I received a reply to that letter.

Counsel for defendant here offered in evidence, and read, letter from Yerkes to Crane Company, dated January 2, 1891, which reads as follows:

Copy.

January 2, 1891.

The Crane Company, Chicago.

Sirs: Yours of even date received. I will be pleased to see a representative of the National Tube Works to-morrow at 11 o'clock, to talk over the matters referred to in your letter.

Yours truly,

CHAS. T. YERKES,  
Vice-President.

Also letter from Yerkes to Crane Company, dated January 21, 1891, which reads as follows:



Copy.

January 21, 1891.

The Crane Company, Chicago.

Dear Sirs: Yours of the 17th was duly received. We will be ready to receive from you, pipe, in accordance with the contract, on and after February 1st. The same to be paid for when tested, in accordance with the specifications accompanying our contract with you. Will you kindly let me know whether you are prepared to carry out the contract in the foregoing manner?

Yours truly,

CHAS. T. YERKES,

Vice-President Columbus Construction Company.

Also, letter from Crane Company to Yerkes, dated January 23, 1891, which reads as follows:

374

Copy.

January 23, 1891.

Mr. Chas. T. Yerkes, Vice-President Columbus Construction Company, City.

Dear Sir: Yours of 21st inst., answering our letter of 17th, is duly received, and in reply would say that you propose a very radical change in our contract for supplying the pipe for the Columbus Construction Company, so much of a change that we cannot accept it.

Respectfully yours,

CRANE COMPANY.

President.

Also letter from Yerkes to Crane Company, dated January 24, 1891, which reads as follows:

375

Copy.

January 24, 1891.

The Crane Company, Chicago.

Dear Sirs: Yours of the 23d received. Am I to understand that you wish to convey the idea that all contracts between you and the Columbus Construction Company are canceled.

Yours truly,

CHAS. T. YERKES,

Vice-President Columbus Construction Company.

Also letter from Crane Company to Yerkes, dated January 27, 1891, which reads as follows:

Copy.

January 27, 1891.

Chas. T. Yerkes, Esq., Vice-President Columbus Construction Company, City.

Dear Sir: We have yours of the 24th inst., and in reply thereto would say that we are unable to see anything in ours of 23d that can be construed or considered as conveying any idea of cancellation of any contracts between the Columbus Construction Company and ourselves.

If you desire us to be more explicit in the matter, we would say that yours of the 21st is, as we understand it, simply a repetition of your previous proposition for a change in the terms of the contract, which proposition upon your part had been duly submitted by us to the mills, and which they declined to accede to, as fully explained in our previous advices.

You ask whether we are prepared "to carry out our contract with you by delivering pipe on and after February 1st, to be paid for when tested, in accordance with the specifications accompanying the contract

376 To this we have to say, that we will be prepared to comply with the contract upon our part, provided you will carry out your side of it. You seem, however, to have a different idea of the meaning of the contract from that which we entertain. It seems to be your opinion that you have the right to defer the payments for pipe until it has been tested in the line and shown to be capable of sustaining a pressure of 1,000 pounds to the square inch. For this or for some other reason you have delayed paying for pipe already delivered, until your indebtedness amounts to more than \$70,000. We cannot consent to deliver any pipe under this interpretation of the contract, which is manifestly erroneous. The contract expressly provides that payment shall be "spot cash" upon delivery of the pipe at delivery points designated by you, and the sub-contract furnished us for use with the manufacturers requires us to pay them in fifteen days after delivery. Moreover, it is expressly provided that the making of payments shall not operate as an acceptance of the pipe so as to release the manufacturer from subsequent liability if the pipe is found to fall short of the test.

This provision makes it clear that nobody contemplated the withholding of payment until the pipe should be tested in line.

You will understand that we do not deny your right to make

a reasonable inspection of the pipe at the time of delivery, and to reject it for defects which may be obvious on such inspection; but we cannot, for a moment acquiesce in your claim that you have the right to withhold payment until the tests are made in the line

Replying specifically, therefore, to your question, we would say, that if you will make payment of the amount due for pipe already delivered, and will comply with your contract for paying spot cash for future deliveries, we will carry out the agreement upon our part.

Awaiting your further advices, we are,

CRANE COMPANY.

Vice-President.

Also letter from Yerkes to Crane Company, dated February 12, 1891, which reads as follows:

(Mr. Yerkes to Crane Company, February 12, 1891.)

On the 30th ult. I telegraphed you from New York as follows: "We are prepared to receive pipe in accordance with contract, particularly that part which provides for test of 1,000 pounds when laid. Although you have not complied with terms of your contract, we will receive pipe if you commence immediate delivery."

Up to the present time I understand you have had no pipe delivered this year. I wish to notify you that we cannot wait longer for the said delivery, and will therefore cancel our contract.

In regard to the pipe that has already been delivered, we are prepared to make some arrangement with you respecting the repair of same and adjusting the accounts now remaining open.

(Signed) CHAS. T. YERKES,  
Vice-President Columbus Construction Company.

Also, letter from Crane Company to Yerkes, dated February 12, 1891, which reads as follows:

Copy

February 12, 1891.

Mr. Chas. T. Yerkes, Vice-President Columbus Construction Company, City.

Dear Sir: Your young man brought in yours of even date a few minutes ago, and upon its receipt it struck me that there

part—  
red in was no occasion for any reply, in view of all that has been said and written; but have since concluded that we had better make answer, in order that we may keep our record straight.

Would say that we answered yours of January 30th, from New York, to the effect that we were prepared to go ahead with your pipe line contract on the conditions of said contract, and we are now prepared to do so. But you have persistently requested that we go ahead on the contract upon terms different from the 378 contract, and this we have persistently refused and now refuse to do.

We have simply demanded that you carry out your part of the contract, and desire now to notify you that if you cancel this contract, you do so at your peril, and we will hold you responsible for the results

We have not delivered any of the pipe this year because you have not asked us to deliver it, and because you have not complied with your part of the contract. We have been, as we now are, awaiting your orders to go on with the contract, and will do so when you comply with your part of the contract.

Respectfully,

CRANE COMPANY.

President.

The Crane Company could, after the 12th of February, 1891, and during the spring and summer months of 1891, have filled the balance of that contract. The mill conditions at that season, as compared with other times of the year, were favorable for getting large quantities of pipe promptly. One reason that comes up every year is that the demand in the earlier months is much less than in the later months of the year. Another special reason at that particular time, was that there was a large amount of pipe ready made for delivery, on these contracts. Saw a portion of the pipe made up, and was advised by correspondence with the mills as to the balance.

Counsel for defendant then read in evidence a letter of Crane Company to Yerkes, dated January 17, 1891, which reads as follows:

Copy.

January 17, 1891.

Mr. Chas. T. Yerkes, Vice-President Columbus Construction Company, City.

Dear Sir: We have yours of the 15th inst. and note the 379 contents.

While you may not have acknowledged that this company has been acting as brokers between the Columbus Construction Company and the mills, yet such is the case. And although you seem to question the honesty and motives of all the parties except yourselves, connected with this matter, an investigation of the facts would show that this company has acted in the best of faith, working for the interests of the Columbus Construction Company since the start, first, in arranging for a supply of pipe upon the best possible terms, which means upon prices and terms that any one familiar with the pipe business would tell you were extremely favorable and desirable; and next, when your company desired a cessation of shipments, arranging that, and going so far as to make advances of money during a very critical time, in order to keep the various parties in line, and in many other things sacrificed their own interests to protect those of your company.

There has been no maneuvering going on at this end of the line beyond trying to keep the various parties satisfied, so that they would not claim the cancellation of their contracts, which we look upon as being very desirable ones for your company, and which we do not believe could be duplicated at anything like the existing price, for the pipe market is decidedly stiffer and the demand very liberal.

If any trouble arises in the matter, it will, we think, be due entirely to your action. The agreement specifies that the time of payment shall be at the time of delivery. This you have refused; and when we proposed a compromise arrangement, you declined that also, and have taken the position that you would only make settlements for past transactions in your own way, and would only do that if the mills would consent to new terms for the future.

We have made an earnest endeavor to bring about such an arrangement as you desire, but without success.

We are as desirous as you can be to have this matter speedily adjusted, and you must certainly acknowledge that during 380 the last three months we have made numerous efforts to reach a settlement.

We ourselves can see but one way that promises a speedy adjustment, and that is to make a settlement in accordance with the contract, as near as it can be done, for the pipe already delivered, then to have the pipe repaired, and then to arrange for the future.

These are three distinct and separate items, and we think should be considered separately. You can arrange them so that

your company can supply itself with pipe equal to any made, and upon more favorable terms than are usually made or desired by any pipe purchasers, but when you ask for much more than this and much more than was contemplated in the original contracts, the mills decline to agree thereto, and the progress of the matter is stopped by the position you take. Yours very truly,  
CRANE COMPANY.

MANSFIELD B. LEA, a witness for defendant, testified:

I am a machinist by trade, and live in Alleghany county, Pennsylvania. When my deposition was taken, in 1893, I was with Spang, Chalfant & Co., and have been with them ever since. Ever since 1890 eight-inch sockets or collars have been manufactured for line pipe for the general trade. There has been no change in kind, style or character of eight-inch sockets since that time.

JOHN KERN, a witness for defendant, testified:

Am employed by Spang, Chalfant & Co. In 1890 was foreman of the threading department. Remember manufacturing of the pipe in question. Was foreman when that part which was manufactured by Spang, Chalfant & Co. was threaded. In making the thread on the pipe, the die is closed down on the end and the pipe is set revolving. My opinion is that the threading was done perfectly and correctly. Saw the biggest part of it threaded. We tested the threading by a standard gauge. It is a thread gauge. The thread is in the inside of a ring about an inch and a half wide. It is made of hard steel. It is screwed on to the pipe until it comes up flush with the end of the 381 pipe. We kept trying it on right along. We cut from eighteen to twenty threads on the pipe in question. That would make about two and one-quarter inches of thread. We always sent the pipe out with collars screwed on one end. The collars were screwed on one end. The collars were screwed on before the test was made in the testing machine. After it was tested the thread protector was put on the other end. Saw this pipe being inspected; I was around with the inspectors all the time. It was tested with water at a pressure of from 800 to 1,000 pounds to the square inch. It is kept under pressure for test from five to ten minutes. In case there was a leakage

we would take the collar off. Sometimes the leakage would be caused by the iron cuttings or fillings getting in at the time the collar was screwed on. By taking it off and cleaning it, it would be all right. After it was ready for shipment cars were run up to the mill and the pipe was rolled out into the cars on skids, very carefully.

#### Cross-Examination.

A die should run about a year. The cutters in a die are three inches long. They sharpen it in the meantime. A new die would stand sharpening a dozen times. By that, I mean grinding. We use them until they get down to two and one-half inches. I gauged pretty much all of the thread on the pipe that was cut for Crane Company, would say over half of them. Saw all of it tested; ninety per cent at least. In testing the pipe by the hydraulic test at the mills only one end was tested so far as the trade was concerned. The collar was screwed on one end of the pipe only.

HOWARD P. BISHOP, a witness for defendant, testified:

In 1890 was clerk for Crane Company. Gave shipping directions to the mills and looked after invoices. Orders for pipe from the Columbus Company were communicated to the mills by correspondence and telegraph. We received duplicate invoices from the mills. We retained one of them and delivered to the Construction Company the other duplicate, and a copy, which was made by us. The invoices showed the size and amount of pipe, and the price and the name of the mill, and the car number and the amount charged for thread protectors. Before 382 sending the invoices to the Construction Company, we added our commission of two and a half per cent. In my business connection with Crane Company, I have received invoices from all the leading mills. It was the general custom to charge for the thread protectors on the pipe, and upon their return to give the purchaser credit. I called the attention of the Columbus people to the fact that we wanted the thread protectors returned. I spoke to Jacob Smith about it. Never heard any objection being made in returning them. Two of the mills made no charge for thread protectors, and we made none against the Columbus Company in those two cases. When protectors were returned, we credited back the amount charged for them. I have made up a statement from the records and facts within my knowledge showing the invoices of pipe shipped during the sum-



mer and fall of 1890, giving the date of charge on our books, the size of pipe, the price for pipe and for thread protectors or rings, the charge for commissions, and the total amount. I have compared this statement with the statement of the plaintiff as to the amount of pipe shown thereby. The statement is the same. I also made a statement showing the charges for thread protectors. The statement shows the two and a half per cent commissions on the amount of pipe delivered. We billed the pipe to the Columbus Company at the same price it was billed to us by the mills. This applies to the other sizes as well as to the eight-inch pipe.

December 11, 1897.

THOMAS J. BRAY, a witness for defendant, testified:

Bray.

Live in Pittsburg. Am mechanical engineer. Commenced pipe business in 1864. Have for twelve years made building and improving, operating and superintending pipe mills a specialty. Have had an acquaintance with making, handling and laying eight-inch gas pipe for the conduct of natural gas, in a general way, ever since it came to be used for fuel in Pittsburg. Was connected with the Paige Tube Company, of Warren, Ohio, in 1890. Mr. Paige and myself went to New York to see Mr. Hequembourg, and met him at the Victoria Hotel on several occasions. The conversation was preliminary about the line. Hequembourg described what he wanted in the shape of a coupling. He said, "I know all about it; I know what we want; 383 we will furnish you a sample coupling." I said, "We will follow the sample; it suits us." We received the samples and made the pipe; that is, about sixty miles. The sample coupling came to us by express from McKeesport. We made our couplings two or three pounds heavier than the sample. There was no deviation from it that I know of. First we made a set of gauges from the sample coupling. It was necessary in order to gauge the master coupling, the one that we received, so we could duplicate it exactly. The gauges were a taper plug like the Pratt and Whiting ones. We made a series of them in order to gauge each coupling at each end before it was put on the pipe. We then made our couplings to correspond. In our process, we tried both ends of the collar on the gauge. If they are not the same, we lay them aside. This is done before the testing of the pipe. The pipe is then taken to a hydraulic tester, and filled with water, and the pressure put on. After the pipe is tested

it is put on to a truck, inspected again, and weighed. The pipe are put in a row, and a man at each end examines carefully, looks it all over, rolls it up an incline on to a pair of scales, and from there on to the car. The pipe is not allowed to drop on another piece of pipe. If it should do so, and become dented, it is put aside. We took every precaution that the knowledge of the business permitted, and did the best we could to avoid inaccuracies. They have not changed the old standard collar for the new Hequembourg collar. The Hequembourg collar is new to me, although we have made some such collars for special work, for heavy hydraulic work. The mills generally manufacture the standard collar. When I superintended unloading the line from the cars, we let the pipe down on skids by means of ropes. Think it is necessary to handle the pipe with care so that it will not leak when in line. Saw some of the pipe in question unloaded at Tolleston. They were rolling it down with skids without ropes, a little roughly, I thought. The skids were eighteen or twenty feet long, and the top of the car probably six feet from the ground. That method of unloading would have a tendency to dent or flatten the pipe and knock the protectors off, and even break the pipe. The means that were used for screwing the pipe together in the line when I saw it were the ordinary means. They had a full equipment of men and tongs. Am not sure whether there was a screwing machine there or not. Have laid 384 gas pipe myself, and have seen instances of cross-threading.

Where pipe is cross-threaded it carries the mark, so that there is no mistaking it. If the pipe is the harder, the thread on the coupling will be cut, and vice versa. You can hardly find a dozen samples of cross-threading all alike, although they are characteristic when you are familiar with the cause. Was stockholder and superintendent in the Paige Tube Company in 1890.

December 13, 1897.

D. E. LYON, recalled on behalf of defendant, testified.

The prices realized for the iron and the pipe I believe to have been fair market prices. The price realized on the couplings I cannot speak positively about. There was no regular market price. We took the best obtainable price after trying to sell them for four or five years.

## Cross-Examination.

I had my interview with Mr. Foreman July 1st at the Du Quesne Hotel, Pittsburg. The contract was concluded the following day. I sent a telegram to Foreman accepting the contract. The telegram was confirmed by letter from me to Mr. Foreman, on July 2, 1890, which reads as follows:

"In accordance with the promise made you by the writer yesterday afternoon, we wired you this morning, 'We will accept the eight-inch order and get to work as rapidly as possible, but cannot get iron to start before some day next week.' Which we beg to confirm. As it looks now, we will be able, probably, to run a single turn during the latter half of next week, and to run double turn from the beginning of the week after. We would like to do better than this, but find it impossible to get the iron in from any quarter at any earlier time."

There was nothing said between us as to where the pipe should be tested to a pressure of a thousand pounds to the square inch. In my own mind, I regarded that question as determined, that it was to be hydraulic test in the mill. We subsequently had correspondence with Mr. Foreman concerning the matter of test. Think we received a letter from him dated July 7th. Subsequently we received by mail a written contract relating to this matter. There was nothing said on July 1st between us as to a written contract. I replied to the letter, inclosing form of 385 written contract. The reply was dated July 12, 1890, and was directed to Mr. Foreman. The conversation of July 1st, was not the first conversation I had with him. It was sometime in June when I met him in New York, at the date of the meeting of the pipe association. It was possibly between the 20th and 25th of June. Between the time of meeting him, in June, in New York, and the date of the contract in Pittsburg, I was in Pittsburg. Before the 1st of July I was trying to get an option on enough iron to make about forty miles of pipe. Don't think I had given orders for the iron before the 1st of July. First, we ran only one mill, that is, single turn, for perhaps a week on ten days. The capacity of that mill on single turn was from eighty-five to 100 pieces of pipe in ten hours. Think we turned out about two and three-quarter miles a week. That was not our full capacity on the double turn. Can't tell exactly how much pipe we manufactured up to the 1st of July, but think that we had made on this order about twenty-two miles at the middle of October; possibly it made nineteen or twenty miles up

to the first. We could not make other sizes of pipe out of the material we bought for the eight-inch pipe. It came to us already cut for that size. Did not make any eight-inch pipe for a long time after the fall of 1890. Perhaps we made some earlier in that year. Since the spring of 1891 do not think we have made any eight-inch pipe. Made considerable prior to that, and sold it to the local gas companies in Pittsburg. The test pressure applied at the mill on that pipe was 700 or 800 pounds. Never had anyone ask for line pressure. Never sold any pipe to be tested in line at any pressure. Never manufactured as much as forty miles of eight-inch pipe for any one order. The orders were not for large quantities at a time. Nominal weight of standard pipe is 28.18 pounds. That is known also as standard. We were allowed two and a half per cent less than the nominal weight, that is 27.48. If it weighed 27.48 pounds to the foot, it fulfilled the terms of the contract. Where the pieces were spliced we were allowed twenty and one-half pounds additional for the extra collar. No definite time was fixed for completing the  
386 delivery of this pipe. We were to give the use of one mill and get the pipe out as fast as possible. Had frequent interviews with Mr. Gilbert and other representatives of the Crane Company at Pittsburg, but have no recollection of any special interview relating to this contract. Our claim was presented several times during 1891, and was finally settled in January, 1892, by payment by the Crane Company. R. T. Crane,  
387 the president of the Crane Company, was a stockholder in the Pittsburg Tube Company in 1890. The Pittsburg Tube Company received a sample coupling of eight-inch standard line pipe some time after the middle of July, 1890. After receiving it we did not make any change in our machinery for tapping nor for manufacturing the couplings. The couplings which we made after receiving the sample were the same as those made before, except that the new ones had one-eighth of an inch in the depth of recess from the edge of the coupling. They differed in no other particular. The couplings we manufactured for Crane Company I think weighed twenty-three and one-half pounds. That was about the average weight of those which we had left on hand as finished couplings. The finished coupling is not quite so heavy as the unfinished by reason of the cutting out of the thread. The taper in these couplings furnished to the Crane Company was five-eighths of an inch to the foot. It went in at least two inches. This information I received by a special report made by our superintendent to me at the time we received

the sample coupling from the National Tube Works Company. The samples brought here to which I testified in my direct examination are the same as those that were manufactured for the Crane Company and the same as we had manufactured before.

*Re-direct Examination.*

The word "Standard," according to the usage then existing, applied especially to the weight. It would have to be good pipe to be standard pipe also. Mr. Crane was also a director of the company in 1890, but was not active in the management, and took no part in the manufacture of the pipe and couplings in question.

*Re-cross Examination.*

Mr. Crane, in 1890, owned one-third of the stock of the company. He became the owner of one-half of the stock in the latter part of 1891 or 1892.

EDWARD M. WOLFE, witness for defendant, testified:

Am foreman of the coupling and tool department of the Reading Iron Company, Reading, Pennsylvania. Have had twenty-one years' experience in the iron works, making tools and serving my apprenticeship. The couplings made by us and involved in this suit were beveled at each end, which produced a recess about nine-sixteenths of an inch deep. The couplings were 388 threaded from each end toward the center. The taper was according to the Briggs standard, that is, three-quarters of an inch to the foot. That standard was used in our mill to my knowledge since 1879. The taper extended from each end to the center of the coupling. As the couplings are tapped they are gauged on a piece of pipe which has been threaded according to the Briggs standard. Both ends of the couplings are tried on the gauged pipe. We never weigh the couplings. We had been making couplings for eight-inch gas pipe a long time before. I claim that the couplings were first-class, good, honest work. In putting thread on the pipe, the pipe revolves. There is an expansion and contraction die placed on a gate that swings on a hinge. The gate is closed or locked together, and the revolving pipe is cut by the die. The thread cut by this die is from two and one-eighth to two and one-quarter inches deep, that is, back from the end of the pipe. The taper on the pipe corresponds with the taper on the collar, and the taper in the collar with

the taper on the Briggs standard gauge. We used the Briggs gauge ring to test whether the thread and taper were proper. The ring is screwed up until the face of the ring comes flush with the point or end of the pipe. Saw a part of this loaded on to the cars at the mills. It was rolled from the ground to the car on skids, and let down inside on blocks of wood, so that the pipe would not strike together. In my opinion, the threading of this pipe was all right. There has not been any change in the method of manufacturing pipe since 1890. We use the same gauges and tools, and the weight of the collar is the same.

#### Cross-Examination.

The Briggs is the only taper used in the manufacture of the pipe in question. We buy these gauges from the makers. The test ring is screwed on by hand as far as possible until it is flush with the end of the pipe. The collar is screwed on as far as possible by hand, and then we screw it up with tongs from three to four threads more. The hydraulic test on the pipe lasted about five minutes, I should think. The couplings used on this Indiana gas line pipe was the same as used on other eight-inch pipe. It was not a special coupling.

389 DANIEL J. SCHROEDER, a witness called for defendant, testifies:

Am foreman of the finishing department of the Reading Iron Company. Have been employed by the company since 1879. In 1890 was foreman on the day turn of the finishing department, which has charge of these pipes which were to carry gas from Indiana to Chicago. The Saunders die is used to cut the thread. I gauged the dies half a dozen times every half day. After the pipes is completed, and a coupling put on, it is taken to the testing trough and tested at from 1,000 to 1,200 pounds. We cut a thread on the end of the pipe and gauged that thread with the steel ring and then cut off the piece of pipe, and that piece is the standard for some time, but it wears away. As it wears away, we substitute another one which has been tested with the steel ring. The job threading the pipe was as well done as any could possibly be. Saw about sixty per cent of the pipe tested, which was tested on the day turn. The protectors on this pipe were made from defective sockets sawed in two so as to make two protectors

out of one socket. Since 1890 the manner of threading the pipe and collars, and of handling and loading it is the same as it was then. They always had the same standard ring and tap in our shop since I was foreman.

#### Cross-Examination.

In screwing the collars on at the mills in this Indiana gas line, they never used a lubricant. They used something that smelt like tar. The Briggs is intended as a standard to cut threads by. It doesn't cut the thread. The Saunders die cuts the thread. The Briggs instrument is called a gauge, the Saunders instrument a die. In testing this pipe at the mills the hydraulic pressure was on not to exceed a minute. While the pipe is revolving and the thread being cut, oil is dropped on to the thread. The turnings or cut metal will not stick to the pipe on account of the oil. If the pipe is hit with a hammer the turnings do 390 not have to be wiped off.

JAMES A. CORCORAN, a witness for defendant, testified:

Live in Pittsburg. Am contractor. Have had experience off and on since 1883 to the present time in laying gas lines. Laid one in Ohio a distance of 150 to 200 miles; it was composed of eight, ten, six and four-inch pipe. Great care is necessary in handling pipe to avoid damage or jarring in screwing together.

In screwing up a line four or five joints are first screwed 391 on the ground, and the end is raised at an angle, and the next joint entered and screwed with tongs. Great care should be taken to enter it properly and keep the pipe in the proper groove in the thread. The thread on the pipe and collar should both be kept clean. If not it would be likely to damage the threads in screwing it up. If not entered properly the thread is liable to be turn or stripped. In unloading out of cars it is let down on skids with ropes until the pile gets up to the height of the car. Then the pipe is moved over on the skids to the pile. The custom generally is to dig the ditch first and lay the pipe in the ditch and cover it as quick as possible. The ditch is left open pending the test. That is considered the proper way. If the line was left on the ground for a length of a mile or two during the weather in September, in Indiana, the line might be a good deal damaged, and it might not. If there is room for the pipe



to expand and contract freely without bearing against anything, I don't think it would hurt the threads much. If one portion of the pipe backs up against something and strains on the joints, it is liable to bend it. If in screwing up pipe by machine, operated by a ten or twelve horse-power engine, the pipe should keep on turning until the engine got stuck, I think it would have a damaging effect, because it does not require a large amount of force to screw the pipe up. It would probably screw it up past the end of the thread and tear it out. I have seen men screwing pipe together when one of them put his hand on the collar that was being screwed up to see if it was working hard or getting hot, or if there was grinding going on that ought not to. He can generally tell by the motion of the pipe and tongs whether it is working free as it ought to. If the pipe is screwed too far or too hard, it might damage the whole thread, or a part of it, and would be apt to produce a leak.

#### Cross-Examination.

In laying the line of pipe in Ohio that I spoke of I did no part of the manual labor. Had never screwed any pipe myself by hand or tongs, or vice, nor by doing any stabbing. Did not direct the stabbing of the line just spoken of. The stabber was an experienced man and knew how to do it. So were the tongs 392 men. Did not have to direct them how to screw the pipe.

Did not tell them how to do it. We had our specifications, but they did not state how the men should screw the pipe up nor how the stabber should stab it. In making tests on that line I remember we made tests of two or three miles at a time, and we had only one leak. Where it was a rough country we had more. Part of it was tested with gas at a pressure of 400 pounds, and the rest at a pressure of 200. In some instances we had to calk the line. That line was laid under a guaranty that it would stand a pressure in line of 400 pounds. We never passed a leak until it was stopped. It was calked in some cases with copper wire, but generally split the collar and calked with iron. I remember of seeing a three-inch line in West Virginia last winter, that was lying on top of the ground and in operation. In unloading pipe for the Ohio line from cars it was let down on skids with ropes to the ground. In screwing that line together it was done over the ditch. Several pieces were screwed together in the ditch and at the open end another pipe was screwed in. This rested on a jack, and as we proceeded the jack was moved ahead and

the pipe was let down into the ditch by windlass. That is, a stick across the ditch with a rope around it. The number of pipe in suspension depended upon the character of the ground. Some places there would be three or four in suspension. The men kept filling in as close as possible after the pipe was screwed together. If a line can move freely it would not hurt it much to be lying out in the middle of the day. This line that I was speaking of was standard pipe. Think it weighed twenty-eight pounds to the foot. But don't know how much the collars weighed, nor whether the weight of the collars was included in the twenty-eight pounds. If proper care were not taken, or you were determined or disposed to do so, you could screw the pipe up all the way and break the whole thread.

#### Re-direct Examination.

In bending the pipe it should first be made red hot. If any considerable bend was made cold of eight-inch pipe it would be pretty hard on the joint next to it and on the pipe. I have seen this large sized pipe bent cold in some cases; have also seen it broken.

#### Re-cross Examination.

After the pipe is screwed together lying on the ground, one ought to be able to tell by observation whether it was  
393 screwed up cross-threaded. If it was the joint would not point straight to the collar. Have frequently seen lines that were lying zigzag before being put into the ditch. I could hardly tell except on close examination whether it was cross-threaded or not. I never was interested enough to look at it. In putting the pipe in the ditch it is laid from one side of the ditch to the other on account of contraction and expansion. In that condition I would not say I could tell whether it was cross-threaded or not.

RUFUS HARVEY, a witness for defendant, stated:

In 1890 was foreman of the finishing department of the Paige Tube Company, at Warren, Ohio. It supplied part of the pipe for the Indiana gas line. I had to do with both the pipe and the sockets, and have had experience in threading pipe since 1877. We go by the Briggs standard at our place. We make the sleeve or collar correspond with that standard, and thread

our pipe to the same standard. After the pipe is threaded and one of the collars put on, it is taken to the tester. In our place there is a trough eighteen or twenty inches wide of cast iron. The pipe is lifted into the trough, which stands on a slope, so that when the water comes in from the lower end of the pipe it drives the air out at the upper end. The two ends of the pipe are packed to hold them from leaking or blowing out. It is filled with water and a direct pump pressure put on to about a thousand pounds to the square inch. The trough is used so as to carry the water back into the sewer after it is let out of the pipe. Some of the mills have their trough on an angle and some level. After the pipe is tested and weighed it is loaded into the cars from racks, which are on a level with the cars. We had blocks 4x4 inches in the car to drop the pipe on. It took thirteen to fourteen of the eight-inch pipe to fill the bottom of the car. The pipe are moved back so as not to fall on each other. After the first row is completed the blocks are put on the top and another row is filled up in the same way. In my opinion the pipe that went out from this mill under the Crane contract was in No. 1 order. The proper way to unload eight-inch pipe from the car is to let it roll down skids and hold it with ropes.

#### Cross-Examination

The taper of the Briggs gauge is three-quarters of an inch 394 to the foot. That gauge always has the same taper. When the pipe is in the testing trough it is pretty wet there. The pressure is on the pipe about a minute, just long enough to hammer the pipe. A man has a hammer weighing two or three pounds and strikes the pipe to see if he can burst it. The object of testing is to find out whether the pipe will burst under that pressure, that is the only object. Ordinarily, under hydraulic pressure of a thousand pounds, if the pipe bursts it would simply split open. I have seen it burst where a piece as large as my hand flew out. What I mean to say is that I saw one-third of the pipe, of the Crane pipe, tested. My knowledge as to the testing of the balance is second-hand. Could not have seen that tested, as I was at home in bed.

JAMES JAMES, a witness for defendant, testified:

Am a machinist. Worked for the Pittsburg Tube Company in 1890, when the Crane pipe was made. I was foreman of the finishing department, butt-welding and lap-welding. The pipe was threaded with what was called the Reading machine. The threads ran about three inches from the end. We tested the thread after it was cut by using a sizing ring made of steel. Think it came from the National Tube Works with a sample pipe. Am not positive. This pipe was tested to 1,000 pounds hydraulic pressure. It weighed twenty-eight pounds to the foot. The damaged sockets were cut into three pieces and thread protectors made of them. It was the most particular order of pipe I ever put out. When the pipe was loaded on the cars strips of wood were put between the layers in order to prevent the threads from being injured.

395

Cross-Examination.

The taper was five-eighths of an inch to the foot. He always used that taper. The taper on the collar was the same. It would not do to have one size on the pipe and another size on the collar. In testing the pipe one man turned on the water and another watched the gauge, and others hammered the pipe. As soon as the pressure got to a thousand pounds the man would say, "that will do," and the pressure was let off. In testing, the pipe is laid flat into the trough and after the test the water runs out of the pipe into the trough. The socket was screwed on to the pipe dry except for such grease as was on it as it came from the machine

396 JOHN CAREY, a witness for defendant, testified.

In 1890 I had charge of the coupling department of the Pittsburg Tube Company. The couplings were tapered from one end to the center, and then turned and tapered from the other end to the center, on a taper of five-eighths of an inch to the foot. Afterwards the threads were cut in. The quality of the threads and taper was tested by using what is called a sized piece of pipe, that is, a piece of pipe upon which a thread and taper had been cut according to standard gauge. This testing with the

sized piece was made four or five times a day. There was about an inch in the center of the coupling which was not tapered, but was straight or flat. We used the Briggs standard tap and gauge. That was five-eighths of an inch to the foot. I could tell that by putting down a rule or using calipers, by calipering down from the end of the center you could see the difference. These sized pieces of pipe which are used to test the thread and taper on the collars, wear out. We changed them every other day. The work on these sockets was done in a good manner.

#### Cross-Examination

I actually inspected the work after it was done. We never had so large an order before. I was never cautioned so much in my life. The tap with which the taper was to be cut was sharpened three or four times a day. If it had not been sharpened so often it would have made imperfect threads. Think it was in June, 1890, that we began to manufacture these collars. They were the same as the standard eight-inch collars we had manufactured before, only we had to take better care of this order.

WILLIAM D. GREER, a witness for the defendant, testified:

Since 1890 there has been no change in the mode of making eight-inch standard line pipe either in weight of pipe or weight and test of collar. For laying a gas line I should prefer the ordinary collars to the heavier. If you put a heavy collar on a light pipe the heavy collar will not give. If the collar is too heavy it contracts the pipe as it screws in and it is apt not to make a good joint.

397

#### Cross-Examination.

The taper Briggs gauge is five-eighths of an inch to the foot. Never had experience in laying or operating a gas line. My statement that a heavier collar is not as good as a lighter one is based on my experience in the mill. A heavy collar and a light pipe always makes a leaky joint. The collar won't come to the pipe. If the collar is heavy, and the pipe light, the pipe would contract or squash. It would not be perfectly round. Don't mean that the threads were broken, but that the pipe was contracted or squashed. Could not see that when it was screwed together, nor after it was taken out, but infer it from the fact that there was a leak.

ALBERT PEDRICK, a witness for defendant, testified:

Have been working for Morris Tasker & Co. for twenty-three years. I am foreman of the tapping department. The sockets or couplings that went into the Crane pipe were threaded by running the tap straight through the socket and were tapered at the same time. The length of taper was two and one-half inches at each end, and in the middle about one inch was straight. We used the Briggs standard gauge. The method of making collars and threading them has not changed since 1890. The Hequembourg collars are heavier than our standard collars. In my opinion the lighter collar is more suitable for the pipe because the heavier one would not work so well together with the pipe. I never saw a collar or pipe that was perfectly round. Think the advantage of the light collar would be that it would be more apt to come up together with the pipe. In loading this pipe at the mill, one piece was not allowed to drop on another.

*Cross-Examination.*

In screwing a pipe into a collar the lighter of the two would give the most. A collar three times as heavy as the pipe would not give as much as the pipe. The taper in the Crane sockets was five-eighths of an inch to the foot. Did not see all the collars threaded, but saw them after they were threaded. Those 398 that were threaded in the day time I saw, but not those that were threaded at night. Did not gauge the sockets myself. Sometimes I would gauge one or two in a day. We had a gauger to attend to that. What I said about the method of loading pipe applies to pipe generally, not specifically to the Crane pipe. Never had any connection with screwing up or with operating a gas line or an oil line. The collars were made for this Crane pipe by us heavier than the ordinary standard collar, because we had a sample socket and gauge sent us to go by. Think that collar was as good as the ordinary one we were making for the gas line. Think ours were just as good but were not any better than those which we made according to the sample.

JAMES EWING, a witness for defendant, testified:

In 1890 was engaged by the plaintiff re-cutting threads on pipe at Deep River. Operated a threading machine. Of the pipe that was brought there to be re-threaded the threads on some of it on the outer edge apparently were all right, but further toward the center and the back end of the threads found quite a number had been stripped out entirely and broken off, sometimes all the way round. Some of the collars had been screwed on so tight that they could not be taken off, so we had to cut the pipe off at the collar. Should judge that new threads were cut on both ends of seventy-five per cent of the pipe brought there. Should judge from fifteen to twenty per cent of the pipe that we re-threaded had broken down and stripped threads. After the pipe was relaid, in 1891, I went over half or two-thirds of it. Should judge that one in every twelve or fifteen joints laid with the Hequembourg collar were calked. Eight or ten calkers followed the screwers.

Cross-Examination.

The line as laid in 191 was tested each night, and the next day was calked where there were leaks. Cannot say whether any of the pipe brought to Deep River to be re-threaded had been calked.

399 JAMES CAMPBELL, a witness for defendant, testified:

Have been in the pipe-making business for twenty-seven years. Have been foreman of the finishing department, that is, the threading department, of the National Tube Works Company's mills for twenty-one years. The grain on the pipe runs lengthwise, and on the collar goes round. Think there is a better quality of iron in the collar than in the pipe. We worked from the Briggs standard. That standard was the one adopted by the Pipe Makers' Association before 1890. The Briggs tap is a disc with a handle in it, and a thread running around the edge of the disc. The Briggs ring is a steel ring with a thread on the inside to screw on the pipe. We got out a sample mile of eight-inch natural gas pipe for the Indiana gas line in 1890 or 1891. It was one of the best we ever made. Don't know that because of



bell. it was sent to Indiana. If pipe is let fall down out of the cars without a rope on it, it is very apt to damage the threads and couplings. I have seen such instances. There has not in the last fifteen years been a great change relative between the weight of the collar and of the pipe from that which is employed at the present time in manufacturing the pipe. In my judgment it would be a disadvantage to put a collar of the weight of the Hequembourg collar on to standard pipe, because it is out of proportion. Never saw a perfectly round pipe or collar. It would be possible to make one, but it would be accidental. If pipe were laid with a machine of twelve horse power, and in screwing up the joint it should stick, think it would be apt to mutilate both ends of the pipe, that is, the mill end and the field end. Think broken. It requires considerable skill to stab a joint of pipe and it would start the collar so that the mill end would be moved or keep it in proper line while it is being screwed up. The threads of the pipe and couplings should be cleaned out with a wire brush so as to get rid of the sand. The sand and dirt causes extra friction, and if it is screwed together so that it gets hot the threads would get galled and would cause a leak. One 400 can tell by feeling the coupling whether it is getting hot or not. It is possible for the men with tongs to screw the pipe up so as to ruin the joint. When the pipe has been screwed up too far the thread will be bruised and galled off up near the neck or heel. A cross-threaded joint would leak. In loading pipe at the mills after it has been tested, they put blocks of wood in the car and let the pipe drop on the blocks, and when a tier is finished they put the blocks on top of that tier and drop the pipe again on the blocks.

#### Cross-Examination

The pipe which we made for the Crane Company was tested. Each length was under pressure two or three minutes, that is, from the time the pressure was first put on until it was taken off. I never saw a pipe laying machine in operation. In screwing up eight-inch pipe with tongs there are usually about fifteen men, sometimes sixteen, working with the tongs. Think a twelve horse-power engine would exert more power than sixteen men at the end of the tongs in screwing up pipe. If the pipe and the couplings were all right, don't think the kind of lubricant would make such difference in screwing up the joint. Think that a heavy collar being more rigid would need a lubricant more

than a lighter one. If the pipe were perfectly round and the collar not perfectly round, think the pipe would give first in screwing it up and it would conform to the shape of the collar. The flange-union which I am looking at it about three and one-half to four inches thick between its outer circumference and the inner circumference where the thread is. If a pipe with a proper thread were screwed into that flange-union, and it had a proper thread, think it would make a tight joint. It would not be more difficult to make a tight joint in that than in an ordinary collar. The Briggs gauge is a taper of five-eighths of an inch to the foot. To the best of my knowledge the taper used in the manufacturing of the mile of eight-inch pipe made by the Standard Company in 1891, was a proper taper. Eight-inch standard pipe had been manufactured for conveying gas ever since natural gas was found in Pennsylvania. The Briggs gauge was adopted by the Pipe Makers' Association. All the mills are members of the 401 association. The only reason I think that better iron is put into the socket is because it is necessary that there should be stronger and better thread on the socket than on the pipe. Never took a joint apart for the purpose of seeing whether it was cross-threaded when screwed up. In screwing it up you can tell by the way it is going whether it is cross-threaded or not. If it was screwed up in my absence, I could not tell whether it was cross-threaded. If the pipe did not lead straight from the socket I should say it was cross-threaded.

W. H. CHESTER, a witness for defendant, testified:

Was employed by the Columbus Company hauling provisions and so forth from the station to the barracks in 1890. The line went through my farm. In unloading from the car they lifted the pipe up and let it roll down on the skids. Could hear the noise three miles away. There was a ravine at my farm. Saw pipe enough slid down that ravine to reach across the ravine and the marsh. The whole distance was about six rods. The pipe was lifted from the hind wheel of the wagon and balanced and thrown off and then slid down the hill. Saw two loads unloaded there. To the best of my recollection it made no noise. That was the first pipe that was rolled down the ravine. Saw from four to six rods of pipe screwed together along the ditch in my farm. It was let down into the ditch with skids and ropes. Saw them unload pipe from the wagon, two or three men got hold of a

joint, lifted it to the hind wheel, balanced it and let it drop down. The last tier on the wagon was pulled out from behind, and the horses driven up so that the pipe dropped down on the ground. After pay-day two-thirds of the employes of the company were drunk. Saw pipe unloaded at Ainsworth in 1891. They used skids and ropes. In 1890 they bent pipe by putting it over a stump and several men would get on each end. They did not use fire. There has been calking on the lines more or less ever since 1891. Some was done across my farm this season. The pipe was calked once on my farm this year. They calked five or six joints in the pipe on my farm which crosses three forties diagonally.

402 In 1890 saw over two-thirds of a carload of pipe unloaded at Ainsworth. The men I saw intoxicated were not at work; they were not at work at any time I saw them intoxicated.

WILLIAM COFFEY, a witness for defendant, testified:

In 1890 lived on a farm in Indiana and helped to unload pipe and haul pipe at Ainsworth. Helped to unload three loads. It was lifted out of the car and put on skids and let go. Sometimes there were pieces of wood that the pipe struck against, and they would fly around. Then the pipe would have to be straightened out. Often the protectors would fly off. Sometimes they were put on, sometimes not. Hauled pipe through Chester's farm. It was almost always unloaded on one side of the wagon, sometimes on both. Sometimes one pipe would strike another when unloaded from the wagon. In the low land near Chester's farm I pulled out pipe with a horse. The pipe had been rolled down the hill. We hitched on to one end and pulled it through the woods with a chain. The ground was too soft to drive on with a team. Did not pull the pipe away as fast as they were rolled down the hill. Several loads had accumulated there. The hill was thirty-five or forty feet long. We laid two strings of pipe lengthwise down the hill about twenty feet apart. The other pipe was rolled down on this pipe. We started them and let them roll. When we pulled the pipe out, I presume the grass and dirt got in the end. It was not stopped up.

*Cross-Examination.*

In unloading pipe at Ainsworth from the cars there was nothing laid on the ground. The pipe simply rolled out on the ground. It rolled till it struck another pipe. Sometimes one end would

start before the other, and one end would roll off the skid. That pipe was then picked up to get it out of the way, and rolled back. It was after the pipe struck that the protectors flew off. They just dropped off. Saw collars fly off also. Could not tell how many collars or how many protectors came off. Perhaps more than a dozen. Saw them throw off two pipes from the wagon at once. When that was done one pipe was thrown off on each side of the wagon. Sometimes the pipe would strike the hub of the wagon. I worked one day at the ravine. I hauled one load of pipe there, and afterwards snaked the pipe out from the foot of the hill.

*Re-direct Examination.*

Mr. Button ordered me to go down and snake the pipe out.

*Re-cross Examination.*

I was discharged. There was some difficulty between me and the boss. He did not find any fault with the way the pipe was put down the hill.

Counsel for defendant offered in evidence:

AGREEMENT between the American Tube and Iron Company and the Columbus Construction Company, dated March 12, 1892, which is as follows:

THIS AGREEMENT made and entered into this 12th day of March, A. D. 1892, by and between the American Tube and Iron Company, party of the first part, and the COLUMBUS CONSTRUCTION COMPANY, party of the second part.

WITNESSETH, that the said party of the first part for and in consideration of one dollar to it in hand well and truly paid, by the party of the second part, at and before the sealing and delivery hereof, the receipt of which is hereby acknowledged, and of the payment hereinafter mentioned, to be made by the said party of the second part, has covenanted and agreed, and by these presents does covenant and agree:

*First.* To furnish and deliver to the said party of the second part ninety-three miles of eight (8) inch standard, normal weight line pipe, made from soft iron, free from blisters and other imperfections, tested at the mill under 1,200 (twelve hundred) pounds hydraulic pressure, and guaranteed to stand a working line pressure of six hundred (600) pounds to the square inch, when proved and tested in lines as hereinafter provided.

Pe-  
American  
Iron Co.,  
Hubb-  
ston Co.

*Second.* This pipe is to be eight inches standard line pipe, with extra heavy couplings, as hereinafter described, and no single joint of the said pipe shall weigh less than twenty-seven and eighteen hundredths ( $27 \frac{18}{100}$ ) pounds to the lineal foot, exclusive of weight of collar or coupling.

*Third.* That no more than five spliced joints shall be included in any one car-load, and that each spliced joint shall weigh the weight of the collar in addition to the weight herein contracted for.

*Fourth.* Couplings to be made from soft, clean iron, all puddled stock, no scrap, one and one-eighth inches thick by six and one-half inches in width, to be made after the design known as the Hequembourg coupling six and one-half inches long over all not less than one (1) inch thick finished, tapered with five-eighths of an inch taper to the foot of screw, five inches of perfect thread therein, being two and one-half inches on each side thereof, and with annular recess for lead on each end, three-fourths of an inch in depth. All couplings to be reamed from the outside edge to center to perfect taper before tapping, and the threading, when completed, to be in perfect alignment.

*Fifth.* That each joint of pipe furnished under this contract shall not be less than eighteen (18) feet, nor over twenty-eight (28) feet in length, threads on each end of the pipe to be two and one-half inches long, eight to the inch of screw, and five-eighths taper to the foot of the screw, said threads to be cut with sharp dies, and of "V" shape to correspond with threads in couplings.

*Sixth.* That it will commence and will continue to deliver from this day, and will on this day and on each working day hereafter, deliver to the party of the second part at railway stations along the right of way of party of the second part, in the State of Indiana, as may be hereafter designated by them, at least one mile of pipe, until the whole amount of pipe herein contracted for is delivered, which shall not be later than July 1, 1892, barring strikes and causes beyond our control.

*Seventh.* That it will pay all freight and other charges for the transportation of said pipe from its mills to destination as above.

405 *Eighth.* That it will pay to the party of the second part all damages and expenses of every kind which second party shall sustain by reason of any defect or defects in the pipe delivered, up to and including the time when said pipe is tested by second party under working pressure not in excess of six hundred (600) pounds to the square inch, and proved tight in the line, which working test shall be made with reasonable promptness, and

*Ninth.* That it hereby agrees to give to the party of the sec-

and part the right to purchase, by giving written notice, on or before June 1, A. D. 1892, fifteen (15) miles, or any part thereof, of pipe, of kind and quality as hereinbefore described, and if demand is made by the second party for said fifteen (15) miles, or any part thereof, on or before June 1, A. D. 1892, then deliveries of the same and payments therefor shall be of the kind and as of the time as hereinbefore and hereafter stated.

*Tenth.* That it will pay to the party of the second part, as liquidation damages, the sum of fifty dollars (\$50) per day for each and every day after July 1, 1892, and until the whole amount of pipe agreed to be furnished as above provided for has been furnished; and second party may deduct the amount of such damages from any money in its hands due first party for pipe furnished under this contract, and first party hereby agrees that daily delivery of iron in quantity specified shall be the essence of this contract.

In consideration of the premises the said party of the second part covenants and agrees to pay to the party of the first part the sum of eighty-one cents (81c.) per lineal foot for each and every foot of pipe received by it under this contract, said payments to be made on each car-load of pipe within fifteen days (15) after receipt of same, less twenty per cent. (20%) which shall be held until final test of line which shall be not later than ninety days from final shipment, unless counterbalanced by damages due to second party.

406 It is expressly understood and agreed, by and between the parties hereto, that the representative of second party at first party's mill is there only for the purpose of seeing that the said pipe comes up to the guaranteed weight, and the threads and sockets are not manifestly defective, and said pipe shall not be construed to be accepted by second party by reason of any payments made therefor, so as to relieve first party from liability on account of its defective character, until the same has been laid and tested in the line and proved.

In witness whereof, the parties to this agreement have hereto set their hands and seals the day and year first above written.

AMERICAN TUBE & IRON CO.,

A. S. MATHESON,

*Genl. Mgr.*

COLUMBUS CONSTRUCTION COMPANY,

by C. E. HEQUEMBOURG,

*President.*

Attest:

F. S. HASTINGS,

*Treasurer.*

Also a contract between the same parties, dated July 28, 1891, which is as follows:

This agreement made and entered into this 28th day of July, 1891, by and between the American Tube & Iron Company, party of the first part, and the Columbus Construction Company, party of the second part.

Witnesseth, that the said party of the first part, for and in consideration of one dollar to it in hand well and truly paid, by the party of the second part, at and before the sealing and delivery hereof, the receipt of which is hereby acknowledged, and of the payments hereinafter mentioned to be made by the said party of the second part, has covenanted and agreed, and by these presents does covenant and agree:

407 *First.* To furnish and deliver to the said party of the second part 42 1/2 miles of eight-inch standard nominal weight line pipe made from soft iron, free from blisters and other imperfections, tested at the mill under 1,200 pounds hydraulic pressure and guaranteed to stand a working line pressure of 600 pounds to the square inch when proved and tested in lines as hereinafter provided.

*Second.* This pipe is to be 8" standard line pipe, with extra heavy couplings, as hereinafter described, and no single joint of the said pipe shall weigh less than 27.18 pounds to the lineal foot, exclusive of weight of collar or coupling.

*Third.* That no more than five spliced joints shall be included in any one carload, and that each spliced joint shall weigh the weight of the collar in addition to the weight herein contracted for.

*Fourth.* Couplings to be made from soft, clean iron, all puddled stock, no scrap, 1 1/8" thick by 6 1/2" in width, to be made after the design known as the Hequembourg coupling, 6 1/2" long, over all not less than 1" thick finished, tapered with 5/8 or an inch taper to the foot of screw, 5" of perfect thread therein, being 2 1/2" on each side thereof and with annular recess for lead on each end, 3/4 of an inch in depth. All couplings to be reamed from the outside edge of the center to perfect taper before tapping, and the threading when completed to be in perfect alignment.

*Fifth.* That each joint of pipe furnished under this contract shall not be less than 18 feet nor over 28 feet in length, threads on each end of pipe to be 2 1/2" long, eight to the inch of screw and 5/8 taper to the foot of screw, said threads to be cut with sharp dies and of "V" shape to correspond with threads in couplings.

*Sixth.* That it has commenced and will continue to deliver from this day, and will on this day and on each working day there-



408 after deliver to the party of the second part at railway stations along the right of way of party of the second part in the State of Indiana, as may be hereafter designated by them, at least one-half mile of pipe until the whole amount of pipe herein contracted for is delivered, which shall not be later than December 1, 1891, barring strikes and causes beyond our control.

*Seventh.* That it will pay all freight and other charges for the transportation of said pipe from its mills to destination as above.

*Eighth.* That it will pay to the party of the second part all damages and expenses of every kind which second party shall sustain by reason of any defect or defects in the pipe delivered, up to and including the time when said pipe is tested by second party under working pressure not in excess of 600 pounds to the square inch, and proved tight in the line, which working test shall be made with reasonable promptness, and

*Ninth.* That it will pay to the party of the second part, as liquidation damages, the sum of fifty dollars (\$50) per day for each and every day after said December 1, 1891, and until the amount of pipe agreed to be furnished as above provided has been furnished; and second party may deduct the amount of such damages from any money in its hands due first party for pipe furnished under this contract; and first party hereby agrees that daily delivery of iron in quantity specified shall be the essence of this contract.

In consideration of the premises, the said party of the second part covenants and agrees to pay to the party of the first part the sum of ninety cents per foot, for each and every foot, of pipe received by it under this contract; said payments to be made on each car-load of pipe within fifteen days after the receipt of the same, less twenty per cent. which shall be held until final test on line, which shall be not later than ninety days from final shipment, unless  
409 counterbalanced by damages due to second party.

It is expressly understood and agreed, by and between the parties hereto, that the representative of second party at first party's mill is there only for the purpose of seeing that the said pipe comes up to the guaranteed weight, and that the threads and sockets are not manifestly defective, and said pipe shall not be construed to be accepted by second party by reason of any payments made therefor, so as to relieve the first party from liability on account of its defective character until the same has been laid and tested in the line and proved.

IN WITNESS WHEREOF, the parties to this agreement have hereunto set their hands and seals the day and year first above written.

AMERICAN TUBE & IRON CO.,

A. S. MATHESON, *Genl. Mangr.*

COLUMBUS CONSTRUCTION COMPANY,

By C. E. HEQUEMBOURG, *Prest.*

Also, contract between the Columbus Construction Company and National Tube Works Company, dated August 13, 1891.

(To the admission of which three documents plaintiff's counsel objected; which objection was overruled by the court; to which ruling plaintiff's counsel duly excepted.)

Said contract is as follows:

410 MEMORANDUM OF AGREEMENT made this 13th day of August, 1891, between the National Tube Works Company of the first part, and the Columbus Construction Company of the second part: WITNESSETH, as follows: The contract of May 21, 1891, between the Columbus Construction Company and the National Tube Works Company, is hereby ended and determined on the following basis:

*First.* The Columbus Construction Company to pay according to contract prices for all pipe and couplings already delivered, being about 2,054 lengths of pipe with couplings.

*Second.* The Columbus Construction Company agrees to pay for the test pipe furnished at Ainsworth, being about one mile of pipe and couplings at the rate of 88½ cents per foot, the fittings and appurtenances to be taken off and returned by it to the National Tube Works Company, no charge for the same to be made against the Columbus Construction Company.

*Third.* The National Tube Works Company agree to credit the Columbus Construction Company to the amount of three hundred and seventy-eight dollars (\$378.00) for 100 Hequem-bourg couplings, mentioned in the invoice May 2, 1891.

*Fourth.* The National Tube Works Company agree to furnish to the Columbus Construction Company 440 special Hequem-bourg 8-inch couplings, and the Columbus Construction Company agree to return to the National Tube Works Company 540 common line pipe couplings, which shall be in full for the 100 couplings specified in clause three and the 440 in this clause specified.

*Fifth.* The National Tube Works Company agree to furnish to the Columbus Construction Company the 8-inch couplings on hand, now in process of manufacture, same to aggregate 2,200 in excess of the 440 above referred to in clause four, and the National Tube Works Company agree to receive in exchange therefor a like number of either 8-inch or 10-inch common line pipe couplings of its own make, the size 8-inch or 10-inch to be at the option of the Columbus Construction Company.

*Sixth.* The National Tube Works Company agree to pay all freight on above shipments made by it to the Columbus Construc-

tion Company and the Columbus Construction Company agrees to pay the freight on shipments made by it to the National Tube Works Company.

411 *Seventh.* The National Tube Works Company agrees to furnish the Columbus Construction Company one mile 8-inch pipe, similar in kind and quality to that specified in the now abrogated contract of May 21, 1891, except the couplings shall have what is known as a direct taper as per sample and specifications to be furnished by Mr. Hequembourg, and the price is to be 88½ cents.

*Eighth.* It is further mutually agreed that the Columbus Construction Company shall pay to the National Tube Works Company upon the execution of this contract \$15,000 on account of the pipe and couplings already delivered and mentioned in clause 1st. Fifteen thousand dollars (\$15,000) within thirty days after the complete performance by the National Tube Works Company of this agreement herein contained, excepting the agreements mentioned in the seventh clause, and the balance within thirty (30) days after the complete performance in all things by the National Tube Works Company of its agreements and stipulations herein contained.

IN WITNESS WHEREOF the parties hereto have set their respective hands and seals the day and year first above written.

NATIONAL TUBE WORKS COMPANY,

By FRANK H. LAMB,  
*Acting Local Manager.*

COLUMBUS CONSTRUCTION COMPANY,

By C. E. HEQUEMBOURG, *Pres.*

412 Mr. BISHOP, a witness for defendant, being recalled, testified as follows:

I have computed on the basis of Mr. Hequembourg's testimony, the saving of the Columbus Construction Company on the purchase of eight-inch pipe for the completion of the line under the three contracts offered in evidence, as compared with the prices which would have been paid for the same pipe under the Crane contract.

(The paper showing the above computation is offered in evidence, and objected to by plaintiff's counsel, which objection is overruled, and exception duly taken.)

Said statement is as follows:

Statement showing saving to Columbus construction Company on later purchases of eight-inch pipe.

The average price at which the unfilled portion of the eight-inch pipe on the contract between the Crane Company and the Columbus Construction Company was bought by the Crane Company was after adding the 2 1/2 per cent. commission charged the Columbus Construction Company, very close to 90 1/2 cents per foot.

The Columbus Construction Company acknowledge receiving the following pipe:

From the National Tube Works Company 9.94 miles of eight-inch pipe at 88 1/2 cents per foot. On this there was a saving of 2 cents per foot, or on the 9.94 miles (52,483.2 feet) .....	\$1,049.66
From the American Tube and Iron Company, in 1891, 42 1/2 miles of eight-inch pipe, at 90 cents per foot. On this there was a saving of 1/2 cent per foot, or on the 42 1/2 miles (224,400 feet) .....	1,122.00
From American Tube and Iron Company, in 1892, 86.42 miles of eight-inch pipe at 81 cents per foot.	
413 On this there was a saving of 9 1/2 cents per foot, or on the 86.42 miles (2,456,297.6 feet) .....	43,348.27
Total saving .....	\$45,519.93

414 The papers now shown me are contracts of the Crane Company with Paige Tube Company, Reading Iron Company, and Morris Tasker & Company for eight-inch line pipe under which pipe was manufactured and shipped in 1890, which has been talked about in this case.

(Counsel for defendant offered in evidence the agreement identified by the witness dated July 12th, 1890, between Morris Tasker & Company of the first part, and Crane Company of the second part which was marked Bishop exhibit and is as follows :)

This agreement, made and entered into the 12th day of July, 1890, by and between Morris, Tasker & Company, party of the first part, and Crane Company, party of the second part.

Witnesseth, That the said party of the first part for and in consideration of one dollar to it in hand well and truly paid by the party of the second part, at and before the sealing and delivering hereof, the receipt of which is hereby acknowledged and of the pay-

ments hereinafter mentioned to be made by the said party of the second part, has covenanted and agreed, and by these presents does covenant and agree,

First. To furnish and deliver to the said party of the second part twenty (20) miles of eight-inch standard nominal weight line pipe, made from soft iron, free from blisters and other imperfections, and guaranteed to stand a working line pressure of one thousand pounds to the square inch when proved and tested in lines as hereinafter provided.

Second. This pipe is to be eight-inch standard line pipe and no single joint of the said pipe shall weigh less than 27.48 pounds to the lineal foot.

Third. That no more than five (5) spliced joints shall be included in any one car load and that each spliced joint shall weigh the weight of the collar in addition to the weight hereinafter contracted for.

Fourth. That each joint of pipe furnished under this contract shall have eight threads to the inch, and at least two inches of thread on each end, and that full uniform taper shall be given to the thread both on the pipe and in the collar.

Fifth. That it will commence not later than July 25th, 1890, and will on said day, and on each working day thereafter deliver to the Railway Company for transportation to the party of the second part, at Railway Stations in ..... at least an average of one-half mile of pipe, until the whole amount of pipe herein contracted for is delivered, which shall not be later than September 15, 1890, barring strikes and causes beyond our control.

Sixth. That it will pay all freight and other charges for the transportation of said pipe from its mills to destination as above, same not to exceed the car load rate of freight to Chicago.

Seventh. That it will pay to the party of the second part all damages and expenses of every kind which second party shall sustain by reason of any defect or defects in the pipe delivered up to and including the time when said pipe is tested by second party under working pressure not in excess of one thousand pounds (1,000) pounds to the square inch, and proved tight in the line, which working test shall be made with reasonable promptness, and

Eighth. That it shall pay the party of the second part as liquidation damages the sum of fifty (\$50) dollars per day for each and every day after said September 15th, 1890, and until the amount of pipe agreed to be furnished as above provided has been furnished, and second party may deduct the amount of such damages from any money in its hands due first party for pipe furnished under this contract.

Exhibit—  
ent. In consideration of the promises the said party of the second part covenants and agrees to pay to the party of the first part the sum of eighty-eight (88) cents per foot for each and every foot 416 of pipe received by it under this contract, said payments to be made on each car load of pipe within fifteen days after the receipt of same unless counterbalanced by damages due the second party.

In witness whereof, the parties to this agreement have hereunto set their hands and seals the day and year first above written.

(Signed): MORRIS, TASKER & CO., Incorporated.  
JONATHAN ROWLAND,

*Vice President.*

Counsel for defendant also offered in evidence the agreement identified by the witness dated July 24, 1890, between Reading Iron Company of the first part and Crane Company of the second part, which was marked "Bishop's Exhibit 3," and is as follows :

Exhibit 3—  
ent. This agreement, made and entered into the 24th day of July, 1890, by and between the Reading Iron Company party of the second part.

Witnesseth, That the said party of the first part for and in consideration of one dollar to it in hand paid well and truly paid by the party of the second part, at and before the sealing and delivering hereof, the receipt of which is hereby acknowledged and the payments hereinafter mentioned to be made by the said party of the second part has covenanted and agreed and by these presents does covenant and agree :

*First.* To furnish and deliver to the said party of the second part forty (40) miles of eight-inch standard nominal weight line pipe made from soft iron, free from blisters and other imperfections, and guaranteed to stand a working line pressure of one thousand pounds to the square inch when proved and tested in lines as hereinafter provided.

*Second.* This pipe is to be eight-inch standard line pipe and no single joint of the said pipe shall weigh less than 27.48 pounds to the lineal foot.

*Third.* That no more than five (5) spliced joints shall be included in any one car-load and that each spliced joint shall weight the weight of the collar in addition to the weight herein contracted for.

*Fourth.* That each joint of pipe furnished under this contract shall have eight threads to the inch and at least two

inches of thread on each end, and that full, uniform taper shall be given to the thread both on the pipe and in the collar.

*Fifth.* That it will commence not later than August 1, 1890, and will on said day and on each working day thereafter deliver to the Railway Company for transportation to the party of the second part at railway stations in Reading, Pennsylvania, at least an average of one-half mile of pipe until the whole amount of pipe herein contracted for is delivered which shall not be later than October 20, 1890, barring strikes and causes beyond our control.

*Sixth.* That it will pay all the freight and other charges for the transportation of said pipe from its mills to destination as above, same not to exceed the car-load rate of freight to Chicago.

*Seventh.* That it will pay to the party of the second part all damages and expenses of every kind which second party shall sustain by reason of any defect or defects in the pipe delivered up to and including the time when said pipe is tested by second party under working pressure not in excess of one thousand (1,000) pounds to the square inch and proved tight in the line, which working test shall be made with reasonable promptness, and

*Eighth.* That it will pay to the party of the second part as liquidation damages the sum of fifty (\$50) dollars per day for each and every day after said October 20th and until the amount of pipe agreed to be furnished as above provided, has been furnished, and second party may deduct the amount of such damages from any money in its hands due first party for pipe furnished under this contract.

In consideration of the premises the said party of the second part covenants and agrees to pay to the party of the first part the sum of eighty-eight (88) cents per foot for each and every foot of pipe received by it under this contract, said payments to be made on each car-load of pipe within fifteen days after the receipt of same unless counterbalanced by damages due to second party.

In witness whereof, the parties to this agreement have hereunto set their hands and seals the day and year first above written.

(Signed):      READING IRON COMPANY,  
By F. C. SMIRK, (L. S.)  
Gen'l Manager.

Signed, sealed and delivered in the presence of Arthur Saford.



Exhibit 2—  
rest. Counsel for defendant also offers in evidence the agreement identified by the witness dated August 6th, no year specified, between Paige Tube Company of the first part and Crane Company of the second part, which is marked "Bishop's Exhibit 2," and is as follows :

This agreement, made and entered into the sixth day of August, by and between the Paige Tube Company, party of the first part, and Crane Company party of the second part.

418 Witnesseth, That the said party of the first part for and in consideration of one dollar to it in hand well and truly paid by the party of the second part, at and before the sealing and delivery hereof, the receipt of which is hereby acknowledged and of the payments hereinafter mentioned to be made by the said party of the second part, has covenanted and agreed and by these presents does covenant and agree:

*First.* To furnish and delivery to the said party of the second part (60) miles of eight-inch standard nominal weight line pipe made from soft iron, free from blisters and other imperfections, and guaranteed to stand a working line pressure of one thousand pounds to the square inch, when proved and tested in lines as hereinafter provided.

*Second.* This pipe is to be eight-inch standard line pipe, and no single joints of the said pipe shall weigh less than 27.48 pounds to the lineal foot.

*Third.* That no more than five (5) spliced joints shall be included in any one car-load, and that each spliced joint shall weigh the weight of the collar, in addition to the weight herein contracted for.

*Fourth.* That each joint of pipe furnished under this contract shall have eight threads to the inch, and at least two inches of thread on each end, and that full, uniform taper shall be given to the thread both on the pipe and in the collar.

*Fifth.* That it will commence not later than August sixth, and will on said day, and on each working day thereafter, deliver to the Railway Company for transportation to the party of the second part at Railway Stations in Indiana and Illinois at least an average of five-sixths miles of pipe until the whole amount of pipe herein contracted for is delivered, which shall not be later than October 10th, barring strikes and causes beyond our control.

*Sixth.* That it will pay all freight and other charges for the transportation of said pipe from its mills to destination as above.

*Seventh.* That it will pay to the party of the second part all damages and expenses of every kind which second party shall sustain by reason of any defect or defects in the pipe delivered, up to

and including the time when said pipe is tested by second party under working pressure not in excess of one thousand (1,000) pounds to the square inch, and proved tight in the line, which working test shall be made with reasonable promptness; and

*Eighth.* That it will pay to the party of the second part as liquidation damages the sum of (\$50) per day for each and every 419 day after said October 10th and until the amount of pipe agreed to be furnished as above provided has been furnished, and second party may deduct the amount of such damages from any money in its hands due first party for pipe furnished under this contract.

In consideration of the premises the said party of the second part covenants and agrees to pay to the party of the first part the sum of eighty-eight and 70-100 cents per foot for each and every foot of pipe received by it under this contract, said payments to be made on each car-load of pipe within fifteen days after the receipt of the same, unless counterbalanced by damages due to second party.

In Witness Whereof, the parties of this agreement have hereunto set their hands and seals the day and year first above written.

(Signed) THE PAIGE TUBE CO.

By A. T. PAIGE, *Treas.*

420 Plaintiff's counsel objected to each of said documents, which objection was overruled, and exception taken.

The Paige contract and Reading contract are the contracts under which the pipe was furnished for the Columbus Construction Company.

422 I identify the papers before me as copies of letters received and delivered at about the time of their respective dates. (The letters identified by the witness were here offered in evidence by the defendant, and are as follows):

(CRANE CO. TO COLUMBUS CO. August 20th, 1890.)

We have telegraphic advices that the following shipments of 8-inch line pipe were made yesterday all to Ainsworth, Indiana:

3 cars from Morris Tasker & Co. (136, 29985 and 11624.)

4 cars from Paige Tube Co.

3 cars from Pittsburg Tube Co.

The Pittsburg Tube Co. also shipped one car of the casing to Greentown, Indiana, August 15th, and the remaining car went forward yesterday.

Morris, Tasker & Co. request that all the 8-inch thread protectors be returned to them at New Castle, Delaware, as promptly as possible, as they need them for future shipments.

of  
and—  
ferred  
here.

You will please collect as soon as possible all thread protectors you receive and return same to the various mills from whom they were shipped, at the same time advising us, and we will see that you are credited with them.

We have instructions from Morris, Tasker & Co. (which you will please note) to not use any of their pipe which arrives in bad condition, but lay it one side, and they will give us shipping directions for it.

(CRANE CO. TO COLUMBUS CO. August 21, 1890.)

We have telegraphic advices of the following shipments of 8-inch line pipe made yesterday all to Ainsworth, Indiana:

5 cars from Paige Tube Co.

2 cars (No. 7600 and 3850) from Morris, Tasker & Co.

3 cars from Pittsburgh Tube Co.

423 We also advise you that Morris, Tasker & Co. request that any defective pipe received from them be turned over to Mr. H. Agnew, No. 50 Franklin St., Chicago. Please have this done, and send us a memorandum of such pipe.

Since the writer saw your Mr. Moore this noon we have been notified that four more cars of 8-inch are on the B. & O. tracks here. These had been turned over to the Consumers' Gas Company, and invoices and bills of lading sent them. We have now, as per instructions, ordered the R. R. Co. to forward said four cars to Liverpool, Indiana.

The following are the numbers of the cars: 1,238, 3,147, 1,650, 702.

(GEO. L. FORMAN, SECY., TO MR. HEQUEMBOURG—Aug. 22, 1890.)

I leave for New York this P. M., where I will see all the manufacturers under contract on your order, and use every effort to hasten their work along. With the exception of the National, however, all are in fair running order at present.

You will find on file in Mr. Bishop's possession at our office the different tales of woe; in other words, causes of the several delays at the mills in question, should you care to refer to them. Telephone our Mr. Murphy on your return. He desires to see you on Ludlow valves and 4-inch line pipe.

By the way, the financial end of our company are very much exercised over your continued non-payments for pipe delivered as per instructions and contract. I am at a loss to understand whether the same is due to your unavoidable absence or a super-

fluity of red tape. At any rate, your people here are in the wrong, even to the extent of a breach of contract, and unless same is rectified at once our treasurer's department will be warranted in taking some more decisive action than the formal requests for payment that they have been making. I sincerely trust you will straighten this most important factor in our dealings at once.

With my best wishes for your speedy recovery and success, I remain .....

424 (CRANE CO. TO COLUMBUS CO.—August 22, 1890.)

We desire to call your attention again to the matter of returning to the mills without delay the thread protectors which are sent with the line pipe.

The mills are urging us repeatedly on this matter; in fact, we have telegram to-day from Morris, Tasker & Co. stating that unless some thread protectors are returned to them at once their shipments will fall off. Spang, Chalfant & Co. also write us that they must have some of the protectors returned. We trust you will give this matter particular attention.

Reading Iron Works telegraph that they have shipped 22 cars in all to Vermont, including shipments of August 21st.

(CRANE CO. TO COLUMBUS CO.—August 23, 1890.)

We have telegraphic advices to the effect that the following shipments of 8-inch pipe were made yesterday:

2 cars from Pittsburgh Tube Co. to Ainsworth, Ind.

4 cars (11,649, 1,517, 36,634 and 11,493) from Morris, Tasker & Co. to Ainsworth, Ind.

2 cars from Reading Iron Co. to Vermont, Ind.

We must again urge you to take up immediately the matter of turning the thread protectors to the various mills at the very earliest possible moment.

(CRANE CO. TO COLUMBUS CO.—August 28, 1890.)

We have telegraphic advices of the following shipments of line pipe made yesterday:

4 cars 8-inch (No. 13,773, 20,909, 12,380 and 20,517) to Bennett's Switch, Indiana, from Morris, Tasker Co.

1 car 8-inch to Clanricarde, Ind., from Paige Tube Co.

1 car 8-inch to Ainsworth, Ind., from Pittsburgh Tube Co.

2 cars 8-inch to Wilder's Station from Pittsburgh Tube Co.

425 1 car 4-inch to Greentown (No. 5049) from Morris, Tasker & Co.

Please do not fail to return the thread protectors as soon as possible. Morris, Tasker & Co., (New Castle, Del.) Spang, Chalfant & Co. (Pittsburg, Pa.) and Paige Tube Co. (Warren, Ohio,) have requested that some be returned to them promptly.

As Spang, Chalfant & Co. are the only concern shipping to Hobart, Ind., we would request that all protectors on pipe sent to that point be returned to the mill named.

As instructed by your Mr. Smith, yesterday we directed the Chicago & Atlantic R. R. to forward immediately to Clanricarde, Ind., the following cars of 8-inch line pipe, which had been turned over to the Consumers' Gas Co. being a portion of their original order.

N. Y. P. & O. No. 21,110, No. 5,433, No. 21,022, No. 20,581, No. 20,312.

Also instructed the B. & O. R. R. to forward the same point two cars of the 8-inch consigned to 46th St. and turned over to the Consumers' Gas Co. as directed by your Mr. Smith. N. Y. P. & O. No. 43,775, No. 1,087.

(CRANE CO. TO COLUMBUS CO.—September 6, 1890.)

Please furnish us at once with further shipping directions for the 8-inch line pipe and oblige.

(CRANE CO. TO COLUMBUS CO.—September 12, 1890.)

Reports of yesterday's shipments of line pipe are as follows:

1 car 8-inch to Vermont from Spang, Chalfant & Co.

2 cars of 8-inch to Bennett's Switch, Paige Tube Co.

2 cars of 8-inch to Wilder's, Pittsburg Tube Co.

5 cars of 8-inch to Sedley, Reading Iron Co.

We would like further shipping direction at once so that we can keep the mills fully supplied.

The National will get to work at once and we want to give them shipping directions for a good quantity now.

426 (CRANE CO. TO COLUMBUS CO.—September 27, 1890.)

Yesterday's shipments as reported thus far to-day, were as follows:

9 cars 8-inch to East Chicago from Reading Iron Co.

4 cars 8-inch to Whiting from Paige Tube Co.

2 cars 10-inch to Swayzee from National Tube Works Co.

Spang, Chalfant & Co. undoubtedly shipped two cars to Whiting, although we have not yet heard from them or from Pittsburg Tube Co.

We must request that you furnish us with further specifications immediately.

We of course will endeavor to have the old stations filled up, before shipping to the new ones, but we must have more specifications on hand than we have had lately, in order to intelligently place same with the mills and keep them all supplied with shipping instructions.

We should like specifications for at least 50,000 feet to-day.

(Signed) CRANE COMPANY,  
Bishop.

(CRANE CO. TO COLUMBUS CO.—October 1, 1890.)

The following shipments of 8-inch line pipe were made you on the 29th ult. as reported to us by the mills.

3 cars to East Chicago from Reading Iron Co.

6 cars to Whiting from Paige Tube Co.

2 cars to Whiting from Spang, Chalfant & Co.

All the mills working on this contract have been requested to withhold further shipments until October 10th as per your instructions.

(Signed) CRANE COMPANY,  
Bishop.

427 CRANE COMPANY TO COLUMBUS—October 9, 1890.

In returning thread protectors at mills, you will see that they are sent to the mills from whom they are sent; in other words, each mill must have its own rings. The mills make this an imperative request, and you will please see that it is complied with. We do not see why the rings cannot be easily separated and tagged as they are removed from the pipe. And as some of the mills make better rings than the others they insist that their own rings be returned to them.

Spang, Chalfant & Company request that another lot of rings be shipped them at once. Please attend to this promptly, sending us memorandum of the quantity returned, together with the bills of lading.

428 Mr. BISHOP, continuing: I have made a general statement of the claim of Crane Company, and computed interest at six per cent. from February 12, 1891, to July 1, 1891, and at five per cent. from July 1, 1891, to December 20, 1897.

E. J. HOSKINS, a witness for defendant:

Have been a machinist for over thirty-one years. Started to work at my trade when fourteen years old. Worked in the shop with my father at that time, and commenced to learn the trade of pipe and fittings. Mr. Kilgore of the Crane Company engaged me to inspect pipe. Mr. Coyle represented the Columbus Construction Company. Some of the pipe was strung along the line, and the rest was in piles. We commenced inspection at Tolleston, and inspected the pipe which was strung along the line until we came to Greentown. After inspecting all that was strung, we commenced to inspect that which was on piles at the different points. The pipe which was strung in most cases was dropped off from the wagon. One piece of pipe laid up against another, or nearly so, all over the line, except a couple of short sections where it was piled on one side; generally it was all piled on one side. When strung the lines often touched each other. We were south of Tolleston when Mr. Kilgore made us a visit. We had then been working five or six days and had many disputes. In the presence of Mr. Coyle and myself Mr. Kilgore said that if we disputed we would never get through with the job, and told me to let Mr. Coyle practically have his way, and after that time I really was not inspecting pipe. I simply made a memorandum of Mr. Coyle's objections; previous to that I had made a memorandum of my objections. After Mr. Kilgore came down Mr. Coyle found the objections. I would glance at it, and make a note in my memorandum book of the date, of what the objection was, whose pipe, what stake number and all the details. Coyle hired one or two men to help roll pipe over and examine both ends, tap the end that had no coupling on, the mill end, and when he found any defect called my attention to it. The first afternoon we started in after Kilgore's visit, he set down some of the objections himself, but finding that it would take too much time and trouble, and his hands being dirty from handling the 429 pipe, said it was better for me to do that work, and he would copy from mine at night. At night, I called off, and he copied from my memorandum. Mr. Haynes did not copy any at night. I made report to the Crane Company. Have looked over the plaintiff's exhibits, X-1 to X-7, inclusive, and find my name thereon. Generally it was written at Greentown, if I remember right. I used three small blank books to record objections to the pipe. (The first book is marked Exhibit 1 to Hoskin's direct examination.) I commenced making it at Tolleston on November 4, 1891.



Mr. Coyle and I agreed upon a key or a system of abbreviations, which is on the cover of the book. At the commencement, for half an hour I used the letter F for flat thread where it was scant. That is not on the key, and we did not use it long. The first letter on the key is one C, that means bad thread in the coupling. Two C's mean crooked coupling, or mark on the coupling that showed as if the weld was improperly made. J, jambed or bruised threads. S, scant or flat thread on top. X, not a very bad defect, or difference of opinion. N, nicked or ragged thread, G, a groove or seam in the iron through the thread. O, oval pipe. A figure is for the number of bad threads. JJ, end of pipe jambed down—poor protector on mill end. The objection indicated by the letter C to the thread, was that the thread was ragged, a little defect in the iron as if it was pulled out in the die, or it might not have been lubricated enough. As to the character of the break in threads that Mr. Coyle would consider an objection, he said it was an objection if the thread showed ragged one-eighth of an inch long in several places through the thread, if the thread was not perfect, so it gave, as he thought, a chance for the fluid to get by. The key which was used in making up these reports finally, that is, the ones which I signed, was somewhat changed from that used by me in the book. Coyle used the letters DT to denote defective threads, where I used one letter. This key was not made until the inspection was completed. I reported to Crane Brothers according to the key first spoken of. Coyle did not write in the field after the first afternoon. The body of the report signed by Coyle and myself is in Mr. Hayne's handwriting. Two C's means cracked couplings. There were a few of those found. That is a case in which the welds did not seem to be perfect, and there was a gap.

430 It would not show very often in the thread, but might be a weakness when you put it into use. J, indicated that the threads had been knocked together against some other pipe or fitting, or that in the handling it had been jambed or bruised, and the thread was practically ruined. From my knowledge of mechanics, and the making of thread on pipe, the objections classified under J could not have occurred in the making of the thread. The letter S means scant or flat thread on top. That is—the thread was not quite rounded out. It didn't come up full. It occurred where the pipe was a little oval. In the great majority of cases, it was above where the joint really came. It seldom went half way down. If it went clear through, it might interfere with making a tight joint. Mr. Coyle found no fault with the taper in the collar or pipe. The cross in my book indicates that I differed from him in his objections. He did the marking on the couplings with white

lead. The letter N, meaning nicked or ragged threads, was used where the thread was torn, little pieces nicked out of it in cutting it in the mill—pieces, say  $1/16$  or  $1/32$  of an inch deep. Unless that was very serious, it would make a tight joint, in my opinion. G means a groove or seam in the iron. That would be where, in making the pipe, there was a little sane crack, or something like that, that would run down into the thread. In the majority of cases, it extended into the thread about an inch. It seldom went down deeper than one-third of an inch. That would not, in my opinion, interfere with a tight joint in the majority of cases. O, meaning oval pipe, that came under the head of defective threads, the same as grooved pipe. It means that where the pipe in the mill is a little flat, there would be on side a very strong thread, or the pipe would be cut away, and on the other side the thread a little flat or not perfect. There were not over one or two per cent. of what I inspected of this character. It could all be used in making a tight line. Figure is for the number of bad threads, the kind of bad threads, the number was counted from the root up. Did not always look on them myself. Sometimes took Mr. Coyle's work for it, after Kilgore came out on the line. JJ means pipe jambed down, and poor protector on the mill end. That is where you could see the protector and everything smashed down, not only the threads, but the whole thing. There was not much of that kind of pipe.

There was a little pipe on the line and in the piles where the protector was absent. The second book used by me is marked Exhibit 2 to Hoskins' direct testimony. And the third book is marked Exhibit 3 to Hoskins' direct testimony. The key is shown only in the first book. Mr. Kilgore gave me directions as to how the inspection should be done, that is, before I went down at all. He told me to examine and mark the pipe so it could be fixed over, all the pipe which I thought would not make a perfect joint. When I first went down Mr. Coyle and I could not agree on defects. He called everything a possible defect which was not a defect for making a tight joint, but simply an imperfection in thread which could not be helped. After Kilgore's visit I made a few crosses showing where the defects were so small that it could not be called a defect. Afterwards I simply let Mr. Coyle have his way. I was told to practically let him throw out what he wanted.

#### *Cross-Examination.*

About half of the pipe inspected was string, and the rest on piles. Most of the pipe mentioned in the red book was Reading iron. There was the greatest amount of trouble with it. When I

first went out I made a close examination. Afterwards did not make a close and critical examination. Understood that the pipe that were defective were to be sent to the Crane shop where they would try to remedy the defect. When Mr. Kilgore came out on the line in November he said nothing to the contrary. In the start, tried with Mr. Coyle, to make a fair inspection. Afterward he came out and practically said Mr. Coyle should have his own say. Mr. Kilgore was superintendent of the pipe department of the Crane Company. He substantially told me to take Coyle's inspection. Coyle's inspection was critical and severe. In my judgment he reported things that were practically not defects. In my judgment they were not enough to make a bad joint. Double J, in my book, stands for thread very badly jammed. That would be included under the letter J in the written reports. The letters D T in the written reports mean defective threads from other causes than jamming. C indicates the same thing in my reports. All the defective threads from various causes are embraced under the letter J. The letter S, signifying split pipes in the written report, would include such defects as sand holes or imperfections in the blank, aside from the thread. In my key the C's indicate the same as D C, defective couplings, in the written report. And the letters D C T in the written report are covered by the letter C in my reports. Never testified in this case before. Have been in the city for the last seven years. Should think that five per cent. of the thread protectors were off of the pipe strung in line, and about one per cent. of the pipe in piles. Saw thread protectors laying around on the ground. Sent my reports in once or twice a week, and was occupied from the 14th of November to the 24th of December.

P. F. SMITH, called for defendant, testified :

Work for the American Tube and Iron Company at Youngstown, Ohio. They make pipe there, but do not make collars. The collars are manufactured at Middletown, Pennsylvania, about three hundred miles distant. The mill at Middletown worked one summer in making the Hequembourg collars for gas pipe in Indiana. Have not made any of these large pipe since. Have been making the ordinary common couplings. We got from eighteen to twenty thousand second-hand couplings from Indiana. They were put under a shed at the end of our mill. In 1894 I picked out fourteen of these couplings at the request of Mr. Coffman, the foreman of the mill. He wanted me to get out some of the poorest with the

least taper and shortest taper that I could find. That was in November, 1894. In order to pick them out I used a steel straight-edge nearly a foot long, put aside to see how much taper they had. Those I picked out were the poorest. They had some spots out. The threads in places were broken. We looked over several hundred of them. Before coming here I found four more of the same couplings left which I shipped to Chicago. The balance of those second-hand couplings were used for steam pipes.

*Cross-Examination.*

I determined whether these fourteen couplings had good or bad taper by using straight-edge. I could tell very quick with a straight-edge. You can lay it in and can tell just how much taper there is, and it will show where the taper commences and where it ends. The rest of the way it will hit all the way through on the threads.

433 I can tell a coupling that has a taper by feeling with my hands.

Would not say whether I can tell whether it was  $\frac{5}{8}$  or  $\frac{3}{4}$  taper. Never made a coupling. Don't know what taper they use. Could not say just what a taper is. Have handled collars for nine years. Never measured particularly to see what taper was, but could feel. Could not tell by feeling how much the taper was. My business is coupling inspector. I inspected these twenty thousand couplings spoken of, for the purpose of seeing if they were fit for line pipe. The question of taper has something to do with their fitness for line pipe. I inspect to see if the threads are all right, not if the taper is all right. They are tapered all right; I take that for granted. Cannot say how much taper there is in these couplings. There is not one-half an inch of taper in the couplings. Never have heard in any conversation about the size or slant of taper. Suppose I know what  $\frac{5}{8}$  taper is. Suppose it means  $\frac{5}{8}$  taper; that is all I can say. It is not  $\frac{5}{8}$  taper in the length of the thread in the collar. It might be  $\frac{5}{8}$  taper in the yard of thread.

*Re-direct Examination.*

In measuring these fourteen collars for taper, I did not measure to get the pitch of the taper. I measured to get the length the taper ran in from the outside of the collar.

A. M. GILBERT, a witness for defendant, recalled for cross-examination:

First went with the Crane Company about the middle of November, 1890, but did not give all my time to it until about the middle of December. Was elected vice-president in January, 1891. Mr. Crane and I had general charge of this pipe line matter, and I attended to a large part of the correspondence. I know Mr. Hoskins. We received reports from him of his inspection. I had main charge of the correspondence with the mills who were furnishing this pipe after I went with the Crane Company. The Reading Company was one of the mills whose pipe was largely involved in this contract. That Company was willing to go on with the arrangement by which Crane Company was to repair the pipe that was found to be really defective. That agreement with the Reading Company was made with Mr. Smink. He came here and told us to go ahead and repair the pipe, and charge the expense to his company. That was in November, 1890, and 434 while the Hoskins Coyle inspection was in progress. I wrote the letter to the Pittsburgh Tube Company, dated May 28, 1891.

Mr. Gilbert here identified the following letters, on the margin:

From Crane Company to Smink, December 29, 1890.

From Crane Company to Reading Iron Company, December 30, 1890.

From Crane Company to Reading Iron Company, December 30, 1890.

From Crane Company to Smink, February 21, 1891.

From Crane Company to Smink, February 26, 1891.

From Crane Company to Reading Iron Company, May 25, 1891.

From Crane Company to Paige Tube Company, December 31, 1890.

From Crane Company to Paige Tube Company, January 7, 1891.

From Crane Company to Paige Tube Company, May 25, 1891.

From Crane Company to Lamb, manager National Tube Works, March 9, 1891.

From Crane Company to Lamb, etc., March 26, 1891.

From Crane Company to National Tube Words Company, May 5, 1891.

From Crane Company to Lamb, May 28, 1891.

From Crane Company to Spang, Chalfant & Co., January 6, 1891.

From Crane Company to Spang, Chalfant & Co., February 18, 1891.

From Crane Company to Morris, Tasker & Co., January, 21, 1891.

From Crane Company to Morris, Tasker & Co., May 25, 1891.

In the letter of Crane Company to Paige Tube Company, dated December 31, 1890, the figures near the bottom are 4,800 instead of 48,000.

That would make sixteen miles of pipe.

My interviews with Mr. Yerkes continued up to December 31, 1890. Don't think I ever saw him on the subject after that.

Counsel for defendant here read in evidence letter to Yerkes, dated January 16, 1891, which read as follows:

Copy.

JANUARY 16, 1891.

*Chas. T. Yerkes, Esq., V.-P. Columbus Construction Company, City.*

DEAR SIR: Yours of 14th and 15th inst. are at hand, contents all noted.

Replying to yours of 14th, we would say, that we have endeavored to explain that the arrangements with the mills were not uniform, for the reason that some of the mills declined to enter  
435 into such contract as was first proposed, and nothing better could be done than to make the arrangements that were made with such mills.

We would recall to you that this ground was quite fully gone over at the time that the representative of the Pittsburg Tube Company and the writer called upon you.

Referring to the first portion of yours of the 15th, please note that the statements in our letter which you criticise are those made by the Paige Tube Co., and not by this company.

Replying to the last clause of yours of the 15th, we have to say, that in yours of December 29th you raised the same question, and that the writer called upon you December 31st and submitted proofs that the Columbus Construction Company requested a cessation of shipments, and supposed those proofs were satisfactory, because after hearing them you made no dissent.

These proofs we shall be pleased to submit to any representative that you may send to see them, and can assure that this point can be readily established whenever necessary.

In yours of 14th you say that you would like to have this matter settled at once.

It is not in our power to decide it.

Acting, as we are, as brokers between the purchaser and the seller, we will do all in our power to bring them together, but we can make no decision.

From the communications thus far received you will have seen that it is beyond our power to obtain the consent of the mills to make the changed terms that you wish.

If you wish to facilitate matters, have you not some one in whose judgment you have sufficient confidence as to authorize him

to take up this matter, which will in the future involve more detailed work than you will care to undertake personally, and have him investigate the rights and wrongs of the various parties up to date and arrange for the future?

We are of the opinion that if you can do this, it will not be a difficult matter to arrange so that your interests will be properly protected.

We make this suggestion because you have expressed a desire to hasten matters, and progress under the existing methods is 436 necessarily slow.

Very truly yours,

CRANE COMPANY.

My statement that Crane Company could have furnished 8-inch pipe after February 12, 1891, and during that spring and summer, in amounts necessary to complete 260 miles in accordance with the terms of the contract, was based upon information received from correspondence, and statements made to me by the representatives of the Reading and Paige Tube Company. In writing to Mr. Yerkes I did not intend to write anything but the truth. In my interviews with him prior to the 31st day of December, I stated to him the general facts and circumstances of the matter, including the claims made by the Reading Company. Do not think there had been much correspondence with other mills up to that time. Should say that Yerkes was apprised of the fact that we had correspondence with some of the mills, and had some representatives of others. As far as I could do so I accurately informed myself as to the condition of affairs by examining correspondence, and so forth, and the books and papers of the Crane Company. The matter was one of frequent discussion between myself and Mr. Crane. One source of my information was the reports of inspection by Coyle and Hoskins. Reports never came to me in the shape in which they had been offered in evidence as signed by Hoskins and Coyle. The total of summary was presented. I think Mr. Bishop presented me a summary. The results of such inspection by reports was transmitted to the various mills whose pipe was involved.

*Re-direct Examination.*

The Reading pipe was not repaired in accordance with their proposition, because Yerkes declined to have it done, except under change in the terms of the contract, as shown by his letter. Did not see any of the pipe concerning which the letters to the various mills were written. Did not know its actual condition. The in-



formation upon which my letters were based was obtained from the inspector's report. Mr. Yerkes and somebody else from the Construction Company, one day stated that the pipe was damaged. I

have no recollection of showing to Yerkes any of the letters  
437 from the mills, or any that I had written to the mills. Received a summary of the inspection reports, but don't think I ever saw any detailed reports.

*Re-cross Examination.*

Mr. Bishop is stenographer and general office man with Crane Company. Did not have any definite agreement with any of the other companies, except the Reading, to repair the defective pipe. I had an understanding with one or two. It was simply this way; they said they would do whatever was right, but before giving us liberty to charge them with the expense, they wanted to know what it was. After I sent them a copy of the inspection report, they rescinded their previous agreement, or a portion of it. They wished the pipe put in line before they made the allowance.

Counsel for defendant here offered in evidence the following letters:

*The Crane Co. Chicago.*

DEAR SIR: Yours of the 15th received. It seems remarkable that you insist upon endeavoring to throw the blame for non-delivery of pipe upon the Columbus Construction Company, when anyone would know that the fact that the delay of the different mills in delivering the pipe—no matter from what cause it emanated—brought us into the cold weather months when it was impracticable to receive it. Because there should be strikes of the employes of the different mills, and they were prevented from delivery until it was too late to avail ourselves of the past season, is no reason why we should suffer from those strikes, further than to excuse them from such delivery. Your communication seems to imply that if the mills were prevented by strikes from delivery of pipe until mid-winter, the mills should then commence their delivery to us. There is another matter that I wish understood in connection with this business, which I have reiterated over and over again, and that is, that we do not admit that we notified you or any of the mills to stop delivery of pipe.

Yours truly,

CHAS. T. YERKES, *Vice-Prest.*

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CHICAGO, Jan. 16, 1891.

*The Crane Co., City.*

DEAR SIR: Yours of even date received. In reply would say, that during all this controversy I have not acknowledged that you were acting as brokers for the Columbus Construction Co., and do not now. In talking with the representative of the Pittsburgh Tube Co., it was merely as one of the parties interested with you in the transaction. If he came here with the intention of showing by his presence that our business relations were with him, or that he wished to have me say something which would commit us to this. I beg to say now, that my conversation at that time related entirely to our business between the Columbus Construction Co. and yourselves, they being only known to us for the reason that you informed us they were supplying some of this pipe. I have never seen any one contracts with any other companies, and do not know that any one connected with the Columbus Construction Co. ever has. There is a great deal of time being wasted in this controversy, and all that we wish you to do is to make good the pipe which we have paid you for, and we are willing to continue on with the performance of the contract, as soon as the weather permits of using the pipe. It looks to me as though there was a great deal of maneuvering going on to the effect, that in case the pipe business opens good for this year and prices are stiff, there will be objections made to delivering pipe, and the excuses will be made for non-fulfillment of contract. On the other hand, if the market is low, the contracts will be fulfilled. We do not wish to be placed in that position, and wish to know at once whether this contract is going to be carried out or not. You will pardon me for speaking thus plainly, but it is not worth while for us to multiply words over the matter.

With regard to your suggestion, that some one be authorized to take this matter up for me, I cannot accede to. It would only make more delays, and there is no necessity for it.

Yours truly,

CHAS. T. YERKES,  
*Vice-Prest.*

439 JACOB SCHINNELER, called for defendant, testified:

Am a designer of machinery for water works, and so forth. Have been in the machinery business since I was a boy. In 1886, was appointed by the courts of Allegheny County to make examination of natural gas lines in Pittsburgh. The customary way to unload pipe is to let them down on skids with ropes. Pipes should

collar. not be put together with damaged threads. The threads should be thoroughly cleaned in the pipe and in the collar. The Hequem-bourg collar is much heavier than the standard eight inch collar. In my opinion, the extra weight would be disadvantageous in making a joint, for the reason that the collar is so much stronger that it would not accommodate itself to any irregularities in the pipe when screwed together as the standard collar would. Neither collar or pipe is ever perfectly round. In laying pipe it should be bent hot. The Hequem-bourg collar has a dovetailed recess. Think if lead were put in there tight enough to make a joint, it would have a tendency to drive the pipe from the collar. Lead expands about double the volume of iron, and contracts in the same way. And the lead would contract away from the iron, and it would leak. Do not see any merit in the dovetailed recess and lead calking feature of the heavy collar.

*Cross-Examination.*

Superintended the construction of a gas line as engineer. Never took part in the manual labor, nor screwed up, nor calked, nor hauled, nor unloaded, any pipe. I directed how it should be done. My only experience was in superintending. It was not necessary that I should have any other, as I was a sufficient mechanic to know whether a job was done right or not. Any man with average intelligence could do this work. We found some of the lines in Pittsburg carrying a pressure of a hundred pounds. It was afterwards reduced to ten pounds to the square inch, and has been operated on that pressure ever since, in order to avoid explosions. We recommended that the leaking joint should be covered by an escape system to take the escaping gas from the joint and carry it to the lamp-post. Have seen an eight and ten-inch  
440 line fifteen miles long under pressure of 400 pounds, that was almost perfectly tight. A few joints leaked—one in thirty probably. That came from cross-threading. In the examination of the lines at Pittsburg, the court came to the conclusion that they leaked so much as to be dangerous, and these escape pipes were afterwards adopted to prevent explosions. Before a line is screwed up, the threads ought to be cleaned with steel wire brushes, and screwed up with a lubricant. I never used oil, but white lead. In screwing up a pipe and collar of the same thickness, if they were not perfectly round, I think the collar would give way first. In screwing up a standard pipe and standard collar under the same circumstances, I think the pipe would give way first. In making a joint by screwing a pipe into a flange-union, there would be the same difficulty as by making the joint with a collar. If there was

complete contact all the way round, the pipe would compress. It would not mash the pipe, it would compress the material. The more compression, the more the pipe would be compressed to a smaller diameter. It would tend in the direction of making a solid bar of the pipe. With respect to the superiority of a heavy collar over a light one, I never made any experiments. Have made experiments by shrinking bands on hubs and cast-iron wheels, things of that kind. Standard pipe and collar have been used in Pittsburgh, to my knowledge, since 1885, and there has been no change so far as I know. Never heard of a gas line manufactured under conditions that it should stand a pressure of a thousand pounds to the square inch in line, and be tight.

T. J. BRAY, recalled on behalf of defendant, stated:

The Briggs Standard was originated by Robert Briggs, and adopted by the Pipe Association in 1886.

*Cross-Examination.*

The coupling which we made was three pounds heavier than the sample sent us, and that was a standard coupling. Have weighed it several times, but can't remember the weight. Never saw a letter from Mr. Foreman stating that the Crane Company left the weight of the coupling entirely to us. Think the standard coupling to-day is what it has been right along as to weight.  
441 Have seen a great deal of iron calking on eight-inch lines.

The calking makes it a little harder to take the coupling off by reason of the burr made by the calking. We usually cut that out when we remove the coupling. I went up on the line one night to see it because we were interested. They had no ropes there at all when they unloaded the cars, that I saw. Watched them three-quarters of an hour. Gas has less specific gravity than air, and consequently permeates more readily. When we made our gauges we took the sample coupling as a basis. We were to duplicate that. We were specifically told by Mr. Hequembourg and Mr. Foreman that they would furnish a coupling that would be suitable. That was at the interview in New York.

E. W. CROSS, called for defendants, testified:

I am connected with Spang, Chalfant & Co., and have been for eighteen years. Have frequently seen pipe screwed together, and put into the ground and unloaded from cars and wagons. There has been no variation in the making of standard pipe and collars within the last fifteen years. The pipe made for the Crane Company was loaded into cars at the mill by letting it down with ropes. The pipe in the mill was a little higher than the cars. We let it down as carefully as we could. The proper way to unload from the cars is to let it down on skids without any force that would injure the threads. If it was let down with force, it would damage the threads. In laying the pipe, the threads in the collar and pipe ought to be wiped thoroughly clean. Our mills have been making 8-inch standard pipe since 1890, up to the present time. I do not know of any change in the process of making or cutting collars or in the weight thereof. Our mills never, to my knowledge, turned out any collars like the Hequembourg collar. That is much heavier than the standard collar. Cannot see any advantage in using such a collar on standard pipe. It is a difficult question to answer, 442 whether I can see any disadvantage in using it. Would be afraid to use a collar of that weight on standard pipe. Don't know anything about that; never saw one in my life before. The Crane pipe was an excellent lot of pipe. In bending pipe in the field, I should heat it first. If it was bent cold, think it would produce a severe strain on the threads of the parts screwed up. I visited a place called Vermont on the line of this pipe, while it was being laid. That was in August or September, 1890. We had a telegram from the Crane people that several cars had been rejected. I went to see Mr. Foreman, and afterwards went down on the line to see the pipe. Saw a large amount lying there on the ground in very bad condition. It was our pipe. On inquiry, found they had trouble with the pipe. The superintendent said that in making a running switch the cars had run into others that were standing on the side track, and in the collision the pipe was scattered all over the ground. It was piled up like cord wood, in every shape. A great many of the protectors were off. The threads were bruised and smashed. I came back to Chicago that night. I first went to the Crane Company and reported, and then went with Mr. Foreman to the Columbus Construction Company's office, and found there Mr. Hequembourg and Mr. Smith. I told them what had been told me at Vermont. Don't know that they said anything. The pipe was accepted, we were paid for it, and that ended the

matter. The sharp edges of the thread were knocked off, and the thread was broken out, and it was stripped in some places for three or four inches all around the pipe. The socket was not hurt.

Testi-  
E. V.

*Cross-Examination.*

Our liability as to the pipe ceased when it was put on board the cars at our mill. I never helped to screw up any pipe in line, but have superintended putting lines together. Never did any  
443 of the manual labor in connection with unloading, hauling or laying pipe, or testing it. I think a man could make himself entirely competent in that respect without actual experience, if he has any degree of common sense. I would not like to put heavy collar on ordinary standard pipe. It is my opinion only; I am not vouching for it at all, but would rather make the pipe in proportion to the weight of the socket. Think the socket would be so rigid that the elasticity of the pipe would be injured; I think so—don't know it at all. The taper in the pipes and collars is estimated to be about three-quarters of an inch to the foot. I knew an inspector at the mill by the name of Vick. He was in charge of the inspectors, and I think he represented the Crane Company. He inspected the Crane pipe. We complained about a lot of men they had there as inspectors, and they were discharged and others got in their place. Our people found fault with them. It was rumored it was on account of the inspectors being drunk or under the influence of liquor.

Thereupon the defendant called as a witness CHARLES F. FOSTER, who testified as follows:

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Am a consulting engineer in mechanical lines. Obtained my education at Boston, Massachusetts—at no institution—in practice. Was in the City Department of Engineering. Have resided in Chicago since 1894, and was chief mechanical engineer of the World's Fair for about eleven months. Supervised and superintended the construction of the steam and water lines. Have been familiar with the construction of pipe lines of large size with screwed joints since 1875 or 1876, all the time. There is very  
444 little substantial difference in the methods employed, and the care necessary to be exercised in the laying of large lines for steam, oil, water and gas. The pipe for steam, water, oil and gas, I think is generally manufactured at the same mills. It is necessary in putting pipe together with screw joints for the purpose of

making tight lines, to exercise the greatest care with gas and air. They are more penetrating than oil or water. Absolute cleanliness must be observed in handling and laying the pipe. The threads are always greasy and catch everything that is flying around. If it is transported by rail, you would find the pipe full of cinders; if the pipe is laid on the ground, it is liable to be full of sand; if laid upon timbers, it would probably be full of dust. Moisture upon the threads would rust them. It would be impossible to get pipe tight if screwed together without removing the rust, dust, cinders and various kinds of dirt. In screwing a tapered pipe into a tapered collar there is no tendency to push the particles of sand or dirt that are in the thread ahead of the pipe as it screws up. If the threads on pipe and collar are in fair condition it is usually sufficient to brush it out; if rusted or corroded you have to take a scraper and scrape the threads out or take a cold-chisel or run a tap in. You can also boil out the threads; boil them out with lye or something of that kind. Wiping them out with waste of cloth is all right if the grease is out, but alone would not answer the purpose. It is absolutely necessary to get all the dirt out by some means or other. In this respect there is no difference between eight inch pipe and other sizes, between line pipe and merchant pipe. Am familiar with the process of putting taper in the pipe. If you screw a tapered pipe into a collar partially tapered or not tapered at all, the collar being of ordinary weight, there would be no effect upon the tightness of the joint. You would have a bad joint by  
445 screwing a tapered pipe into an untapered collar. The only effect of inserting a tapered pipe into an untapered collar would be that the length of contact would be somewhat diminished. It is extremely doubtful whether a difference between a taper of  $\frac{5}{8}$  to the foot and  $\frac{3}{4}$  to the foot could be detected by the eye in two inches of thread either on the pipe or in the collar. Such difference would make no difference in the tightness of the joint. I would rather have the standard collar than the heavier collar spoken of as the Hequembourg collar for the purpose of making a tight line with standard eight inch pipe because it is not so rigid. You have strength enough in a standard collar to stand any pressure that the pipe will stand. It is proportioned to stand the same pressure that the pipe will stand. There is no advantage from having an enormous mess of iron in excess of what is necessary; it is a disadvantage in this way; that in making a joint to be tight under a high pressure you have got to screw them very tightly together. If there is too great a disproportion in the rigidity of the coupling and the pipe, the pipe has to conform itself entirely; whereas if they are more nearly proportioned in strength it will come and go, give and take, and it is not so severe on either of



them. It is very seldom that you find either a perfectly round collar or pipe after they leave the dies and tap in the mills. They are held round while being cut and threaded and tapped, but spring back to their original shape, and when they are screwed together and pressure applied they will return to round shape. Pressure exerted in all directions on the inside of pipe makes it cylindrical. If you can get four, five or six threads in good contact in a pipe line you can get a good working joint at high  
446 pressure that will last indefinitely. I have seen such instances.

Was present in Terrant's shop on the 29th of November, 1897, on behalf of the Crane Company. Mr. Hequembourg conducted and controlled the experiments that were carried on there. On that day I saw water pressure put upon a line of pipe now in the court room, up to 1,000 pounds. There was some leakage on one collar, a spray leak, that was stopped by calking very easily by Mr. Reynolds of the Crane Company. That line was taken apart at the request of Mr. Reynolds. When this suggestion was made, Hequembourg said that he would be glad to do it, but they had no tongs. There were tongs there; they were applied to the pipe, very little power was applied to the tongs to unscrew the collar; the pipe didn't turn once with the tongs. It was removed the rest of the way by hand. Made an examination of the thread on pipe and collar immediately after removal. Found it dirty and gritty. More or less of the lubricant put on in putting it together was still left there; found it gritty. Probably had not been more than one and a half threads in contact. It was screwed up by hand. The pipe was so small that the coupling slipped on an inch and a quarter before the threads came into contact at all. It was turned up by hand without any trouble at all until the thread on the pipe was entirely covered by the coupling. The threads that had been in contact were jammed down flat. Everybody said it would be impossible and altogether foolish to expect to make a tight joint with that collar. The pipe was too small for the coupling. Nobody would expect to make a tight joint with that pipe in that collar. This was the line that does not have calipers on. I saw pressure put on up to 1,000 pounds upon the line that had the calipers on. I did not see that screwed together or unscrewed.  
447 There was very little leakage under this pressure; it was substantially tight. The application of the caliper to one axis of that pipe is not a valid test of the exact amount of expansion in the pipe and collar. The pipe and collar are never round. If the caliper is put on the short axis it will show a movement, apparently showing expansion, whereas it is simply the effort to put the pipe into true cylindrical form. Where it is put on the long axis the short axis would continue to expand. I don't think you could get

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at the fact and degree of expansion in the pipe and collar definitely by that process. If you took observations all around you would simply come to getting an average which might be right or wrong. The number of axis at right angles in a cylinder that may be imagined is infinite. Then there are other sources of error; you might not get caliper points on the exact middle of the pipe, and the rigidity of the caliper itself. An offer was made at Tarrant's shop on behalf of the Crane Company to Mr. Hequembourg and others to take the couplings involved in the experiment on the line without the calipers and make a tight line at 1,000 pounds air pressure. That offer was declined unless we would take the pipe too. The answer to that suggestion was that no one ought to expect to make tight work with this piece of pipe. Then the attorneys on the other side offered that we might take some of the couplings here in the court room and make a specimen. Judge Wing declined that for the defendant on the ground that he had never examined the couplings in the court room. I saw the couplings identified in the court room and taken away. There were representatives of the Crane Company and the Columbus Company present.

Thereupon the counsel for the plaintiff objected to any evidence as to experiments conducted with these couplings unless  
448 it was also proposed by the defendant to show that the pipe with which the experiments were made was pipe delivered under the contract between the defendant and the plaintiff upon the ground that this evidence was of collateral matters and was not pertinent and material to the issues on trial in this cause. This objection was thereupon overruled by the court; to which ruling of the court the plaintiff, by its counsel, then and there duly excepted. Thereupon the witness Foster proceeded to testify in regard to the experiments made with these collars, which were the collars known as the Kaufman collars, or some of them, as follows:

Seven of these collars were taken to the Judd street shop of the Crane Company. They were marked and record was taken of the marks put on them. Hequembourg insisted there should be nothing done to them beyond cleaning, and Kilgore pointed to one of them where the thread had been broken down and said, "We will put a tool in and straighten that thread up," and Hequembourg assented to that, but he did not want them retapped or anything of that sort. There were representatives of the Crane Company over there at the shop and also of the Construction Company. The couplings were first put into the cleaning tub, where all the couplings and fittings were cleaned. It was an iron vat filled with soda water or something of that sort—lye water or something of the kind, to cut the grease off; and then they were dried out and brushed off thoroughly with a fine wire brush; and I think in two couplings the

thread was straightened at the start of the thread where it had been struck with something and bent. The threads were only  
449 scratched out with the wire brush. The lengths of pipe were all prepared for this experiment when I got there. Mr. Kilgore offered to recut all the threads on this pipe. Mr. Coyle, on behalf of the Columbus Company, said he would be satisfied to have one recut, and this was done accordingly. We put the seven couplings actually into line. The lengths of pipe employed in the experiment were common eight-inch pipe about two feet four inches long; all wrought iron, I suppose; I am no chemist and cannot tell positively. It is common pipe, and that pipe is now in the court room. These couplings were screwed up on the regular eight-inch threading machine, and under Mr. Kilgore's direct instructions. Everything was watched by both sides closely. It was done in the ordinary way in which such work is done. The joints were all cleaned, and the lubricant, boiled linseed oil and plumbago, was mixed in the presence of all of us and applied to the joints, and it was all screwed up in the regular way, just as you screw any pipe up. When we got the line completed and plugged, I think it was some after five o'clock in the afternoon. When the collar was screwed on to the pipe the collar would revolve and the pipe would be held by tongs, and when we screwed the pipe into the same collar, the pipe would revolve. The first coupling happened to be a little bit defective at the starting of the thread, and Kilgore got it what we call cross-threaded. It ran on perhaps an inch or an inch and a quarter when he discovered that fact and stopped and took it off. This tore the threads on the pipe quite badly but did not affect the thread of the coupling. I think this not the piece of pipe that had been newly threaded at the instance of Coyle. After we got the line screwed together it was filled with water and pressure pump attached and pressure raised gradually to 1,000 pounds. At 500 or 600 pounds there was a slight drip,  
450 which afterwards stopped of its own accord. This is a matter of frequent occurrence. The pressure was raised to 1,000 pounds and in a very short time, ten or fifteen minutes, the leakage had stopped. At 500 pounds joint number 6 leaked; that continued ten or fifteen minutes. At 1,000 pounds joint 6 was still dropping and joint 9 commenced to drop, and that lasted about ten or fifteen minutes. That stopped itself. I don't think there would be any difference in these experiments as a test of the collars alone, whether the pipe, instead of being the pipe that was actually used, had been full lengths of standard line pipe. This pipe weighed twenty-three or twenty-four pounds to the foot, which is, I think, the correct weight of standard pipe. Every facility was afforded to the representatives of the Colum-

bus Company to examine the line for leakage under 1,000 pounds' pressure. They reported no leakage before they went home that night. Kilgore then suggested an air test. The representatives of the Columbus Company objected, and went away. We got the pressure of 1,000 pounds up about a quarter or ten minutes to 6. It was tight at 6 o'clock. We left there probably at half-past 6 or a quarter to 7, and it was still tight. Kilgore offered to let them leave a man there and he would leave a man in charge of the pipe and leave it there all night, or they could seal the joints up with paper and write their names on them so that they could not be removed without detection—do anything, in fact, to satisfy them that the pipe would not be disturbed during the night. The only answer I heard was a demand for the couplings, made by Mr. Coyle. Then we all went home that night. The following morning there was no representatives of the Columbus Company present; when we commenced operations there was one present, but as soon as we commenced he left. The next morning we applied hydraulic pressure up to 1,200 pounds.

It was tight at 1,000 pounds. We developed some leaks and drips which all dried up and ceased at a quarter past 12, or twenty minutes past 12. We started about 10 o'clock in the morning. Then tested the pipe with air at a pressure of 925 pounds. We could not get a higher pressure on account of a leak in a valve on the reservoir. This leak was not either in the pipe nor coupling, nor anywhere near it. The line was absolutely tight at 925 pounds. We started to apply air pressure at about 2 o'clock and at 6 o'clock we had 925 pounds. The next morning the gauge showed 900 pounds. In the morning we found a little leak at the point where the supply pipe enters the bushings. That, with the change of temperature, accounted for the fall. Put soap and water on it, went over it twice and found no leaks. I have made experiments with Crane collars or standard line pipe collars for the purpose of seeing whether I could make a tight joint with various mutilations of the thread several years ago. We took one coupling and cut all the thread out of it entirely, except a piece at the middle, or one end, three-quarters of an inch wide, to see if we could get a tight joint of that. Then another coupling we recessed to see whether there was enough metal in the coupling or not to admit of the use of lead if we thought desirable; took a line coupling which was absolutely straight through, without any taper: I have taken them with a taper of half an inch, and the rest of the coupling straight, and an inch away, up to the usual amount, an inch and a half or an

inch and three-quarters. We tested them with water up to 2,000 to 2,500 pounds, and had no difficulty in getting tight work on all of them.

452 Thereupon the defendant called J. C. KILGORE as a witness, who testified as follows:

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I am superintendent of the Crane Company, of the engineering department. Am a machinist and tool maker by trade. Learned my trade in my father's shop originally. Have had an extensive experience in handling pipe. Was engineer of machinery in the Centennial Exposition in 1876, in charge of all the machines and power on the grounds. Laid all the steam pipe and looked after it. Was with Allis & Company, in Milwaukee; with Fairbanks, Morse & Company. With the Crane Company have been draftsman, superintendent of pipe mill, making lap and butt welded pipe; afterwards took charge of the malleable iron department and pipe stock on Judd street. Have had considerable experience in making and threading pipe with screw joints, but not in laying it in the field or ditch. There should be no difference with respect to the precautions necessary to make a tight joint between screwing together a large sized steam pipe and a large sized pipe in the field, except the heavier the pressure the more care you would naturally take with it. I have had experience in laying and putting together line pipe and line couplings, but not in a line to carry gas for any distance. In order to get a tight line you must have good thread, care must be taken not to abuse the thread, must have it clean and well lubricated and then screwed together firm. If dirt is allowed to remain on the threads it is liable to cut. There is no tendency in screwing the pipe into the collar to push the dirt ahead of the pipe in the thread, unless there is a large lump of dirt. The taper will slide; it is like a sled runner. Sand or anything of that kind will cut the top of the thread of the pipe if it is in the collar; if in the pipe it will cut the top of the thread off in the collar. Pipe  
453 and collars are not perfectly round after they come out of the tapping and threading machines. In screwing up eight-inch wrought iron pipe in a wrought iron collar the pipe and collar will adjust themselves so that slight irregularities in their conformity to each other will disappear. Taper on the pipe and in the collar is not essential to make a tight joint. In screwing a tapered pipe into a straight coupling there is no tendency to

grind down the threads of a collar. It would stretch the collar out and the pipe possibly compress some. The tapered end of the pipe would not get further away from the collar as it went in. I don't know that it would. I never tried it. In two inches of thread the total slant at the rate of three-quarters of an inch to the foot would be an eighth of an inch in two inches; one-sixteenth to an inch, one thirty-second on each side. I saw the bevel gauge by which Tarrant claimed to determine whether the slant or taper in certain collars was correct or not, and do not think it practicable to determine accurately the slant or degree of taper in a collar by such process. A coupling is a rough forging laid on a surfaced plate and the thread is not tapped out with any regard to the outside surface; therefore, the variations of the outside diameter would affect the experiment; it being out of round, you might turn your gauge from one side to the other and vary it so it didn't run parallel through your coupling. It is impossible to look into one of these collars and determine just where the point of thread touches the gauge. If the gauge happened to be applied at a point where there was a little inequality on the first or second thread, it would show that it didn't touch the thread, while in fact the thread was proper  
454 taper. If that instrument were to be used at all it would be necessary to place it on every part of the thread all the way around. I have seen plenty of couplings threaded. I never saw a line coupling made. The couplings are threaded with a taper tap at the mills, and it would not be possible to have the same coupling threaded at one end at a slant of five-eighths to the foot and at other at a slant of three-quarters to the foot unless the tap was taken out and other one substituted on another taper. During the execution of this line pipe contract I was superintendent of the malleable iron department of the Crane Company. I was down in Indiana on the line on two or three trips to see the pipe. I had nothing to do with the correspondence or business part of the enterprise. First went down on the line in company with Forman to Ainsworth when they were laying the line at Deep River; went down at Mr. Forman's request. Mr. Forman never had any practical experience in the pipe line business. Went to the pumping station at Deep River. Saw Mr. Hequembourg and Mr. Smith. There was pressure on the line when we got there, I believe; it was about ten or eleven o'clock; pressure about sixty pounds to 100 or 160; nothing like what we expected to carry on the line. My impression is there was pressure both ways from the pumping station on one line. Smith was with me most of the



time on the line. We were all in company together. Hequem-  
bourg and Forman were more together, and Smith and I. We  
saw leaks, pretty strong leaks, in some of the joints. I noticed  
that both the mill end and the field end of the joints leaked. As  
to the proportion between the two I could not say. This was a  
subject of discussion between us on that day. There was not any

comparison made in my presence of the number of mill ends  
455 and field ends that leaked. I noticed where the line stopped  
the end of it was up out of the trench, hanging in the ditch;  
possibly might have been 150 feet. Smith explained to me that  
the pipe was screwed together and then slid off the bank into  
the ditch. I told him it was a heavy strain on the pipe, and I  
attributed part of the leaks to that. He said that was the way  
it was done in the oil and gas regions in Pennsylvania, and they  
had no trouble there. I saw some pipe at the station that had  
been injured after the pipe had left the mill. I don't remem-  
ber any conversation with Hequembourg or Smith on that sub-  
ject further than he explained the care they were taking in put-  
ting it together; that some of their men had worked on pipe lines  
in Pennsylvania, and they were using the greatest of care in put-  
ting it together, brushing the threads out well. I told Hequem-  
bourg I thought there was a better lubricant than that they were  
using; cement, I called it. They seemed to be using an asphalt  
paint of some kind. It looked to me the same that is meant to  
be used for smoke stacks. I recommended that they use a cement  
composed of litharge and oil and red lard. After coming home I  
mixed a keg of it, but did not send it to them. Mr. Forman  
never gave me any instructions where to send it, so it remained  
in the factory. I was down there three or four hours that day,  
I should think. Don't remember of hearing Hequembourg say  
that he wanted Forman to come down there, take the right of  
way and the tools of the Construction Company and the men  
and try his hand at making a tight line. Hequembourg and  
Smith came back with us. Saw two leaks in the body of the pipe  
that day. The leaks were scattered along the line, pretty evenly  
distributed. They didn't take any collars up or take any joints  
apart that day. Hequembourg or Smith did not suggest  
456 taking up any for the purpose of seeing what made them  
leak. They did not suggest anything as to remedying the  
leaks; they had us down for that purpose. I don't remember  
now any further suggestions I made except as to putting in the  
ditch and the character of the lubricant. I next went down  
with Mr. Crosse, of Spang, Chalfant & Co., to Vermont station.

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Saw some pipe unloaded there and piled up there. We found some pipe there badly damaged. It looked as if it had gone through a wreck. The damage showed itself principally on the threads. I remember the circumstance of its being bruised and that we were there to ascertain why, and did ascertain from some one that they had had an accident on the road some way and injured some of it. The next time I went down to East Chicago with a representative of the Reading Company to see some pipe that they had shipped in. Some of it had been injured after it left the mill. The thread had been bruised on considerable of it. The pipe was not as full thread as the Columbus Company were demanding. I showed it to this representative of the Reading mill, showed him the defects that the Construction Company were pointing out to us, and he examined it with me. This visit with the representative of the Reading Company was before the Coyle & Hoskins inspection, I think. There were several carloads of pipe involved in that inspection I made with the Reading representative. I was down on the line in connection with Coyle and Hoskins' inspection. Mr. Hoskins was sent by our company. The next I heard about it was reports coming in from down there. They were sent to me and I forwarded them up to the office, and after some days I was sent down by Mr. Forman to see how they were getting along, and to hurry them along to get it done before cold weather would set in. I went down to East Liverpool and from there got a wagon and drove out to the line, and when I got there 457 I found Hoskins and Coyle working along on the line, inspecting the couplings and the pipe strung along in line. Hoskins explained to me how he was conducting the examination, and that Coyle was throwing out pipe that was in his judgment perfect enough to go in and make a good joint. After hearing his account of it, I told him that the best way to do was to let Coyle have his own way. They were receiving the pipe, and he had his instructions from their company what he should receive, and it was no use for him to be disputing with them; to let Coyle have his own way as they were receiving the pipe, and we were trying to find out how much of it they were going to receive. I don't remember anything further being said except that he wanted to find out how much pipe the Columbus Company would accept so that we could get a settlement from the mills. I only received a few of these reports. They came on sheets. I afterwards told them to send them to Mr. Bishop, and think they came to him after the first week. I saw their inspection and noticed what defects or alleged defects were marked

down. Where the pipe would be out of line, there would be a flat place on top of the thread three-quarters or half an inch; they would call that a flat thread and throw it out. I do not consider that this affected the joint or weakened the joint any. The smallest amount of flat thread that I saw them mark any pipe condemned for was, I would say, half an inch, as near as I can remember. In my opinion that would not injure the pipe as affecting the tightness of the joint at all. They called couplings, split couplings, where the weld appeared in the thread. It might be a defective weld, and it might not be, but rather than take any chance, Coyle was condemning them. If it was a perfect weld it wouldn't hurt the joint a particle. I saw some jammed threads

there. This injury could not have occurred in the process  
458 of manufacture, but must have occurred since then. They were condemning for very slight jam or bruise. I saw them condemn as jammed threads, threads which were not, in my opinion, important as affecting the tightness of the line; some that would have made a tight line in my judgment. Collars are tapped with a taper tap made of tool steel revolving in the collar held upright. Pipe is threaded by a head or die with cutters on the inside of it and the pipe revolved on the inside. The front of the tap bears the brunt of the cutting. As you grind off the first threads and begin to come further up on the tap, that does not make any difference in the slant; the slant is the same. The slant of the Briggs standard is three-quarters of an inch to the foot. I also saw one or two couplings that were marked down as defective which had been jammed. I didn't see them inspect a very great deal of pipe. Don't think I saw any inspection after I had given Hoskins instructions to let Coyle have his own way in everything. Coyle condemned the pipe for chipped threads, also, where the thread was partially stripped off. They did not use any instruments for the purpose of ascertaining the depth of the taper or slant of the taper. What they discovered were things that any competent inspector would have discovered or seen if he had looked at the pipe. I was present at the tests made in Tarrant's shop since this case has been on trial.

Thereupon the witness proceeds to testify to the occurrences at Tarrant's shop substantially as given already in the testimony of the witness Foster, and also expresses the same general views as Mr. Foster as to making a tight line with the joint of pipe which he saw taken apart on that occasion. He also states that he saw another coupling unscrewed, but in order to do that it became necessary for him to send

to his company's shop and get some chain tongs. He also  
459 testifies in substantially the same way as Mr. Foster as to  
the experiments made upon the Kaufman couplings taken  
over to the shop of the Crane Company, to which evidence  
in so far as it referred to experiments made upon these col-  
lars with pipe other than that included in the contract be-  
tween the plaintiff and the defendant, the plaintiff, by its  
counsel, then and there duly objected, which objection was  
overruled by the court and the evidence admitted, to which  
ruling of the court the plaintiff, by its counsel, then and  
there duly excepted. He also states that the taper on the  
pipe he got to experiment with these collars was three-quar-  
ters of an inch, made by the Briggs standard gauge, and  
that he did not know whether the pipe was iron or steel pipe;  
it might be soft steel or iron, and that there was no difference  
when it comes to tightness of line between wrought iron  
and soft steel pipe. He also testified that he got the pipe  
cross-threaded in the first coupling that he attempted to  
put on by the coupling being out of round, and that he dis-  
covered this by the rumble of the machine, and could see  
that it was pulling a little harder than it ought to on the  
first starting of a coupling.

A joint leaking under hydraulic pressure will close of itself. Coyle  
said that evening after we had got through with the hydraulic test  
that he had instructions not to allow an air test. The air test  
made at the Crane shop was made on a platform just outside the  
building in the open air. I don't think that there is any differ-  
ence between an experiment made under the conditions just  
stated in its bearing upon the sufficiency of the couplings from  
what it would have been if the test had been made with full lengths  
of standard wrought iron pipe if the same care was used in put-  
ting on. The pipe actually used weighs about twenty-four pounds.

The standard pipe weighs about twenty-eight. I should say  
460 an air pressure might show a leak where water might not,  
but with respect to the structural strength of the coupling,  
there is no difference between an air test and a water test. In  
my judgment, a well-made standard collar is better than the  
heavy Hequembourg collar for making a tight joint for a line in  
the field for gas or air pressure. It is more pliable, will adjust  
itself more readily to the shape of the pipe. The pipe and the  
coupling will adjust themselves one to the other. If this pipe  
should be screwed into the heavy collar, which might not be  
perfectly round, the adjustment would take place all on the pipe.

If screwed into a lighter collar, the adjustment would be divided between the two. I think it is possible to make a tight joint with a collar about thirteen pounds in weight, having no taper in it, and which has the threads stripped away in the center of the coupling to within an inch of the front of the coupling, and from the other end several threads stripped away and then the sixth thread some. It is possible to make a tight joint under 500 pounds pressure with a collar, the thread of which has been bored away, leaving about four threads, and some places only three and a fraction. It is possible to make an air tight joint at 425 pounds pressure with a pipe which is first threaded and then has grooves an inch apart all around the coupling cut in it with flat threads at the end of the thread and the collar having corresponding grooves.

Witness identifies four certain couplings referred to by the witness Smith as having been sent from Youngstown, Ohio.

#### Cross-Examination.

My opinion is that pipe ought to be screwed up right in the ditch and left there after it is screwed up. Have seen pipe laid in that way in streets of Chicago by this company. I have seen water pipe and steam pipe put in that way. I never saw line pipe screwed in the ditch that way. I reported to the Crane Company after I came back from Vermont that the pipe had been injured, but I don't know that they did anything to repair it or take it back. I had never tried the lubricant that I recommended to Hequembourg and Smith, but I had seen it in use. I say now that the principal object of putting anything on the thread is to use it as a lubricant, not as a cement, but I still have an idea that it should be used to some extent as a cement. I suggested to Hequembourg and Smith, when I was down on the line, that in cases where there was a bad leak they cut the couplings out and put in a flange union of some kind. A flange union costs more than a collar, probably twice as much. You take more chances in screwing a flange union on than you do in screwing a collar, owing to its stiffness, but you can pound it with a hammer and make it fit. A flange union compresses the pipe and makes the pipe do all the yielding to make a fit, if there is any irregularity. I had thought for a long time that the thickness of a flange union made it harder to get a tight joint than with a collar; have talked it over with other witnesses in this case. I didn't hear all the conversations between Hequembourg

and Forman when I was down there at that time. The idea as to the inspection made by Houston on behalf of the Crane Company was that I supposed the amount that that company would refuse would be determined by this inspection, and we wanted to arrange with the mills about this. I thought that some of the pipe that they rejected on this inspection would be proper pipe to put in a line guaranteed to stand a pressure of 1,000 pounds to the square inch and prove tight. I didn't take it that Mr. Hequembourg, in the suggestion that he made that there were no tongs at Tarrant's shop, was objecting to screw the joint apart. In screwing up ordinary standard line pipe it could stop at any point so it didn't come up near the shoulder. It should stop back at least two or three threads from the shoulder. At the test at the Crane Company's shop of these Kaufman collars, we spent an hour and a half or two hours in washing them out, and cleaning and scratching them with a brush. In that time we washed and cleaned out seven collars, and there was sometimes two and sometimes three men engaged in that work. In making these tests the lubricant used was plumbago and boiled oil. I now think that is better than that which I recommended to Hequembourg. I do not think a man would be justified in screwing up a pipe line with collars that were in the condition in which any one of those exhibited me on my direct  
462 examination was, and which I testified could be used to make a tight joint up to four or five hundred pounds; I don't believe he would be justified in putting it down one block, either in the city or in the country. When I was screwing this pipe up at the Crane Company's shops to make the test I used a hammer on the collar, tapping it from time to time, kept tapping all around.

#### Re-direct Examination.

I have seen air leaks take themselves up in the same way water leaks do. I made a report as to scant threads or short thread on Reading pipe at East Chicago from my own observation there. I couldn't say how much of it there was; occasionally a piece. I would think a man warranted in putting the seven collars that I used in the experiment in the Crane shop into line with the expectation of making a tight line.

Re-cross Examination.

I think it would be proper to put these Kaufman collars in a gas line, intended to carry 1,000 pounds pressure to the square inch, under the condition that it should prove tight in line working under that pressure.

Test  
J.

Thereupon DANIEL HARRINGTON was called as a witness on behalf of the defendant, and testified as follows:

Test  
De  
He

Am foreman of the section of eight-inch natural gas line. Live at South Chicago and am employed by the Indiana Natural Gas and Oil Company. Began to work on that line in the spring of 1892. Had been digging bell holes around the collar to repair the line. The first was about two years ago. During those two years I had dug probably a dozen or so. Dug them to repair leaks, then calked the joint with lead and also put in some clamps; two clamps in the whole five years. I have calked probably fifty joints. I have done all the calking that was done on that division so far as I know; the state line division. It begins at the state line and ends at the little Calumet River, Tolleston Marsh, a distance of between sixteen or seventeen miles. It would  
463 take me about five minutes to calk one of those old lead joints that broke out fresh and leaked a little. In the fall of 1892 I was on another division on the line for about two or three months. Discovered leaks in that line where the line was under water. A gas leak would show on top of the ground by the color of the earth. Where there is a leak after a joint has been calked with lead, and the lead has been poured, the lead is kind of worked out. To repair that, I would go around it with a calking tool, find out where the lead was furthest outside of the collar, come around to that point and get my lead all in just even with the surface of the collar. Never calked any on the Ainsworth division. Was foreman of a station there, a by-pass, and had charge of the line walkers inspecting the line for leaks. They reported a few; went over the division every day. They now have two line walkers over the line; the man who starts at Greentown, and the man who starts at Chicago. I think it takes them fifteen days to make the trip. They report leaks if they find them; stick stakes for the leaks they find. It probably takes four or five pounds of lead to fill up the recess in the Hequem-

bourg collar. I drive it in cold. I have probably calked in my division, eighteen or nineteen miles, in five years, one hundred leaks all over. There has been no calking done on that line in two years to my knowledge, except what I have done.

464 Defendant's counsel offered in evidence an agreement dated

June 5, 1890, between Columbus Construction Company of the first part and Indiana Natural Gas and Oil Company of the second part, together with the paper known as Exhibit C, referred to in said agreement and by reference made a part thereof, which with Exhibit C thereto attached is as follows:

Memorandum of agreement, made and entered into this fifth day of June, 1890, by and between the Columbus Construction Company, a corporation of the State of New Jersey, of the first part, and hereinafter called the Construction Company, and the Indiana Natural Gas and Oil Company, a corporation of the State of Indiana, party of the second part, and hereinafter called the Natural Gas Company.

Section 1. The Construction Company hereby agrees to convey or cause to be conveyed or assigned to the Natural Gas Company all rights, title and interest acquired or held by it, in and to certain gas and oil lands and leases in the State of Indiana, together with the gas wells and pipes and all other property thereunto belonging, and more particularly described in a schedule hereunto attached, marked "Exhibit A," and which schedule is hereby made a part hereof.

Section 2. The Construction Company further agrees that it will procure and convey, or cause to be procured and conveyed, to the Natural Gas Company, a right of way for a pipe line or lines from certain gas or oil wells situated in Howard and Grant counties, in the State of Indiana, to a point near Greentown, Indiana, and from thence to a point on Indiana Boulevard on the boundary line between the States of Indiana and Illinois, provided that there condemnation proceedings are necessary in order to obtain said right of way the Natural Gas Company will at the request of the Construction Company institute such proceedings in accordance with the laws of Indiana in that behalf, and will thereunder acquire such right of way, such proceedings to be under the direction of said Construction Company, and said Construction Company shall pay all the cost and expense thereof, and all such sums of money as may be awarded or fixed as compensation for lands taken, or for damages.

The number and location of said wells and the proposed line



and description of said right of way are more particularly set forth and shown upon "Exhibit B," attached hereto, and 465 made a part hereof, provided, that the Construction Company may locate any portion or portions of said right of way, not exceeding one mile to the right or left of said proposed lines, if necessary to avoid obstacles.

Section 3. The Construction Company further agrees to locate and drill certain gas wells and to furnish all the materials and labor for, and construct the pipe lines of the Natural Gas Company, from the said wells, and from the wells shown in "Exhibit B," to the said point near Greentown, Indiana, and thence to said point on the boundary line between the States of Illinois and Indiana, upon the right of way shown in said "Exhibit B," or as said right of way may be changed in accordance with the provisions in Section 2 hereof.

The manner of construction, the capacity and performance of said pipe lines and their appurtenances, and the character of the materials to be used therein, are to be in accordance with drawings and specifications hereto attached and marked "Exhibit C," and which are hereby made a part hereof.

Section 4. For the due and faithful performance by said Construction Company of all the matters and things herein agreed to be done and performed by said Construction Company, as particularly shown by said several exhibits, the said Natural Gas Company will pay to the said Construction Company as follows:

Two million dollars in the full paid-up shares of the capital stock of the Natural Gas Company, and four million dollars in the first mortgage six per cent. gold bonds of the Natural Gas Company, said bonds to be a part of a total authorized issue of five million dollars, the remaining one million dollars thereof to be issued from time to time, as the said Natural Gas Company may require. And all of said five million dollars of bonds shall be equally and without preference of one bond over another, and without reference to the actual time of issue, secured by a first mortgage or deed of trust, of even date with the said bonds, made to the Illinois Trust and Savings Bank, of Chicago, and Winter, of Indianapolis, in the State of Indiana, as trustees, and conveying to said trustees all the property of said Natural Gas Company of every kind, real, personal and mixed, leases, contracts, easements, rights of way, pipes and connections, rights, privileges and franchises which may then be owned or controlled, or which may at any time thereafter be acquired, owned, controlled or enjoyed by said Gas Company, and which deed of trust duly executed and recorded the said Natural Gas Company shall deliver to said trus-

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tees, and also shall at the same time duly execute and deliver to said trustee, the Illinois Trust and Savings Bank, four million dollars, in first mortgage bonds, which shall thereupon be uthen-  
466 ticated by said trustee. the Illinois Trust and Savings Bank, and deposited with the said Illinois Trust and Savings Bank. The said deed of trust and the bonds secured thereby shall be approved as to form, terms and times of payment of principal and interest, by the president of said Construction Company, before the exeution thereof by said Natural Gas Company, and shall bear date the first day of July, A. D. 1890.

Upon the certificate of the president and engineer of the said Natural Gas Company that the Construction Company has complied with the provisions of Sections 1 and 2 hereof, except as to so much of said right of way as shall then be in litigation in proceedings to condemn the said Illinois Trust and Savings Bank upon the presentation or the filing with it of such certificate shall deliver to said Construction Company or as said Company shall direct, one million dollars in said bonds, with abatement of the interest thereon from the date thereof to the time of such delivery, and the said Natural Gas Company at the time of the making of such certificate by its president and engineer shall execute and deliver to said Construction Company, or as it may direct, certificates for twenty thousand shares, full paid, of its capital stock.

And thereafter, from time to time, as the work remaining to be done hereunder by the said Construction Company progresses, the Construction Company shall become entitled to further payment in proportion to the work done, out of the three million dollars par value of said bonds, and one million dollars of capital stock remaining to be delivered.

The president and engineer of the Natural Gas Company shall upon request of the Construction Company, from time to time, certify to the said Illinois Trust and Savings Bank the amount of work thereafter done, and the amount of bonds, to which the Construction Company has thereby become entitled, and the Illinois Trust and Savings Bank shall thereupon issue and deliver the same to the Construction Company, or as it may direct, retaining such certificates as its warrant therefor.

And upon the making of such certificates the said Gas Company shall thereupon issue and deliver, as said Construction Company may direct, a proportionate part of full paid-up capital stock. And when the said Construction Company shall have fully complied with this contract upon its part, then upon the acceptance thereof, in writing, by the president and engineer of the Natural Gas Company, all of said four million dollars of bonds and all of

said capital stock, not theretofore issued and delivered to said Construction Company or under its order, shall be issued and delivered to said Construction Company, or as it may direct, 467 and the presentation and filing with said Illinois Trust and Savings Bank of said acceptance, shall be the warrant to said Illinois Trust and Savings Bank for the delivery of the remainder of said bonds.

Section 5. Unless the provisions of Section 1 shall be complied with within three months from the date hereof, this agreement shall be null and void, and this contract shall be fully complied with by said Construction Company on or before January 1, 1891, saving to said Construction Company such time as it may be delayed by bona fide legal proceedings, or by strikes.

In witness whereof, the parties hereto have caused this instrument to be executed in duplicate by their respective presidents and attested by their respective secretaries under their respective corporate seals this fifth day of June, A. D. 1890.

COLUMBUS CONSTRUCTION COMPANY,

By C. E. HEQUEMBOURG, President.

Attest: C. K. WOOSTER, Secretary of

COLUMBUS CONSTRUCTION COMPANY.

(Seal.)

INDIANA NATURAL GAS AND OIL COMPANY,

By JOHN B. COHRS, President.

Attest: P. A. McEWAN, Secretary of

INDIANA NATURAL GAS AND OIL COMPANY.

(Seal.)

New York, June 5, 1890.

The within contract is hereby approved by the subscribers, the holders of a majority of all the stock of the company outstanding at this date, pursuant to Section 1, Article 2, of the By-Laws of the Columbus Construction Company.

CHAS. T. YERKES,  
E. C. BENEDICT.

## EXHIBIT "C."

Or general outline of contract obligations of the Columbus Construction Company for delivering gas from Indiana wells to the reducing station at state line of Indiana and Illinois as per terms of contract dated June 5, 1890.

## THE GAS.

The gas will be led from the wells through 3, 4 and 6-inch connections as the capacity of the wells require, direct to a main feed line 10 inches in diameter from the pump station at Greentown, Indiana, into the leased territory, as more fully shown by Exhibit "B" to contract. Through this line gas will be carried by the well pressure to the pumping station and delivered there at a pressure of 165 pounds gauge or 179.7 pounds, absolute.

## THE PUMPING STATION.

The pumping station includes a boiler and engine house with accompanying pipes and fittings. In the boiler house is located a batter of 16 boilers 16 ft. x 60 inches with a reserve space for 16 boilers of same dimensions. These will furnish the power for driving a series of 6 compressing machines, each consisting of steam cylinder and gas cylinder, with a reserve space for an equal number for future contingencies.

This surplus power may be called into service whenever from any cause the well pressure is not sufficient to deliver the required amount of gas at the station at 165 pounds pressure, and it can be utilized in driving another series of compressors placed in the same engine house between the present compressors for which space is provided in plans. This extra set of compressors can either take gas at a lower pressure than 165 pounds and deliver it to the present compressors at 165 pounds pressure or it can take an extra amount of gas at 165 pounds and compress it direct into the main line, thus giving additional delivery at state line.

## THE COMPRESSING MACHINE.

The compressing machines consist each of a steam cylinder 24 inches by 30 inch stroke, and a gas cylinder of 10 inch by 30 inch stroke. At 80 revolutions per minute each machine has a capacity of 3,333,000 cubic feet of gas at 1 atmosphere, or a total for the six machines of 20,000,000 cubic feet per 24 hours.

469 These machines take the gas from the feed line at 165 pounds gauge pressure, and can compress it to 525 pounds and discharge it through the inter cooler, consisting of a loop of eight-inch pipe, into the main line.

The connections between the loop and the main line are so arranged that the gas can be discharged direct into the main line without passing through the loop if so required. The main line or conduits from the pump station to the state line is about 116 1-2 miles in length, and consists of two eight-inch wrought iron pipes laid parallel in one ditch. This will give a storage capacity to each conduit when filled with gas at a pressure of 300 pounds gauge of an 4,296,520 cubic feet at 1 atmosphere or for the two lines a capacity of 8,593,040 cubic feet.

### HIGH PRESSURE REDUCING STATION.

At the state line will be erected a high pressure reducing station. Here the gas enters the regulators at a pressure of 300 pounds or less and is reduced to a pressure of 100 pounds and discharged into the low pressure mains for delivery, to the low pressure reducing station which will regulate the pressure for city service.

This high pressure station is so arranged that the gas can be taken from either main at high pressure, passed through the regulators and discharged at low pressure into either one of the low pressure mains, or it can be passed direct from the high pressure mains into the low pressure mains without passing through the regulators.

### SCHEME.

The intention of this scheme is to provide a plant of ample capacity to deliver during the first year after construction 5,000,000 cubic feet or more of gas each 24 hours, after making allowance for 10 per cent. loss by leakage.

The construction of pipe line for delivering gas from the wells in Indiana to the reducing station at the Indiana state line may be included under the following heads, viz.:

1. The feed line.
2. The pumping station.
3. The main line.
4. The reducing station.

470

**FEED LINE.**

The feed line will consist of a single conduit formed of wrought iron pipe 10 inches inside diameter, connected by screw couplings and laid in ditch, extending from pumping station into the leased territory.

The wells will be reached by 3, 4 and 6-inch connections, according to their capacity leading into the feed line, with valves for regulating the flow and pressure of the gas. This feed line will deliver the gas from the wells to the pump station at Greentown by well pressure alone. It is more fully shown in Exhibit "B" to contract.

**THE PUMPING STATION.**

The pumping station will take the gas delivered by the feed line and pump it up to a pressure sufficient to force (but not exceeding 300 pounds to the square inch) the required amount of gas through the main line to the reducing station.

It will consist substantially of a pump house and boiler house built of brick with roof of iron, or iron and slate, supplied with six compressing machines, sixteen boilers, and all pipes, valves and fittings necessary to do the work indicated, with reserve space for an equal amount of additional power, as shown more fully by annexed plans.

**MAIN LINE.**

The main line will extend from the pumping station at Greentown to the reducing station at the state line, an approximate distance of 116 1-2 miles, and will consist of two conduits. These conduits will be made of wrought iron pipe eight inches inside diameter, connected by screw couplings and laid parallel about eight inches apart in one ditch. They will be provided with the requisite valves for regulating the flow, and cross-overs for transporting the gas from one conduit to another.

The main line will deliver the gas from the pump station by pressure generated by the compressing machines, which will at the same time utilize the well pressure at which the feed line delivers the gas to the pumps.

See specifications for main line and right of way part of Exhibit "A" to contract.

471

**REDUCING STATION.**

The reducing station will take the gas supplied by the main line and reduce it to the pressure of 100 pounds for delivery. It

will be built of brick with roof of iron, or iron and slate, and will be supplied with four regulators, pipes, valves, blow-offs and heating apparatus, as more fully shown by annexed plans.

### DELIVERY.

The delivery of gas from the reducing station will be not less than 5,000,000 cubic feet at atmospheric volume per 24 hours.

### REFERENCES TO PLANS AND SPECIFICATIONS ATTACHED.

Main line specifications marked "A."

The pumping station plan marked "B," entitled general plan of compressor room for Greentown station.

Elevation "B" 1. Marked elevation of brick structure for pumping house at Greentown station.

"B" 2. End elevation. Marked section of pumping house at Greentown station.

"B" 3. Specification of machinery.

Plan marked "C," entitled plan of boiler house, Greentown station.

"C" 1. Elevation of boiler house, side removed.

"C" 2. End elevation, marked boiler house, Greentown station.

Reducing station. Plan marked "D," entitled reducing station at state line, showing plan and elevation with front removed, and plan of piping

"A."

### SPECIFICATION.

For hauling eight-inch pipe, digging trench, laying pipe and refilling trench for pipe line from Greentown, Indiana, to Chicago, Illinois.

472

### ROUTE.

Said line is to begin at a point of the William Elliott farm in the N. W. corner of the S. W. quarter of N. W. quarter, section 32, town 24 north, range 5 east, in Liberty township, Howard county, Indiana, and running thence in a direction nearly north 45 west, and following a line of stakes for a distance of 116 1-2 miles, more or less, to a point where the Indiana boulevard, in Lake county, Indiana, intersects the state line of Indiana and Illinois, the end.



**PIPE LINE.**

Between the points mentioned in the preceding paragraph there will be laid a double line of eight-inch pipe of the material and after the manner hereinafter specified.

**PIPE.**

The pipe is to be made of wrought iron of standard quality used for such purposes, eight inch inside diameter, and to be joined together by taper screw and socket joints, threads on pipe to be not less than 2 1-4 inches, V shaped cut taper, and eight to inch of thread. Socket joints or collars to be of extra length and thickness, threads therein to conform to taper of threads on pipe, and pipe and collar to be tested at the mill under 1,000 pounds hydraulic pressure.

The weight of the pipe shall not be less than 27.18 pounds to the foot. When laid the pipe shall stand for twenty-four consecutive hours at a working pressure of 400 pounds to the square inch without manifest or material defects, or leakage exceeding 10 per cent. of its total storage capacity.

Tests to be made in five mile sections, as soon as each section is completed.

**TRENCH.**

The trench shall not be less than two feet and ten inches deep, but at such points as grade figures are given on the stakes, the trench shall be dug to correspond with said grade figures irrespective of the ordinary depth as called for above. The trench shall be dug of such width as proper construction of the line may require.

473

**CAVING DITCH.**

The first party is to keep the ditch in good condition until the pipe is laid and tested, and no claim is to be made on second party by reason of the ditch caving in before the pipe is laid.

**RIVER, CREEK OR STREAM CROSSINGS.**

Where line crosses rivers, creeks or streams, the trench shall be excavated a sufficient depth to admit placing the pipe when laid below the bed of the river, creek or stream for its perfect and complete protection, and in such manner as required by the engineer in charge of the work

### DRAINS.

Where the ditch crosses drains the same shall be put in as good condition as they were before the ditch was dug, and any damage sustained by land owners or tenants by reason of damaged drains shall be paid for by the first party.

### FENCES.

All fences taken down by the first party for whatsoever purpose shall be replaced by them and left in as good condition as they were previous to the line being commenced, and any fences damaged or destroyed shall be replaced or paid for by the first party, it being distinctly understood that all damage sustained by reason of the digging of the trench, laying of the pipe, refilling the ditch or hauling the pipe, except such as are covered by the right of way taken by first party for second party, shall be settled by the first party.

### LAYING THE PIPE.

The pipe, which is to be eight inches inside diameter fitted with tapered screw joint, shall be laid in a first-class manner in every respect, and every joint shall be thoroughly screwed to place. After the pipe is laid it shall be tested and made tight as before specified under a gas or air pressure of 400 pounds to the square inch.

474

### RE-ENFORCED JOINTS.

At all river, creek or stream crossings, when required by engineer, joints shall be strengthened or re-enforced by proper fittings furnished for the purpose. The fitting, labor and lead required in putting same in place shall be furnished and paid for by the first party.

### SAFETY JOINTS.

At all points where the line runs along public highways or crosses the same, or runs adjacent to a farm house, or buildings, when required by the engineer, safety joints shall be placed upon the line if furnished for the purpose by the party of the second part, and the labor and lead required in putting same in place shall be furnished and paid for by first party.

**BLOCKING.**

Each length of pipe shall be thoroughly blocked if the ground is not perfectly solid, if so required by the engineer of the first party, so that it will have a firm rigid foundation.

**TESTING.**

The pipe shall be tested with gas or air to 400 pounds per square inch and the time of making these tests and the manner of making them shall be decided upon by the superintendent of the first party.

**TAMPING AND RE-FILLING THE DITCH.**

When the pipe is laid and before being tested, the filling between the joints to be thoroughly rammed underneath and around the sides of the pipe. When the joints are tested and found tight the earth to be thoroughly tamped underneath and on the sides of the joint, so as not to give the pipe any chance to settle, caused by the weight of the earth on top of the pipe.

After the ditch has been tamped in the above manner to the satisfaction of the superintendent of the first party the ditch shall be filled in and all of the material taken out of the ditch shall be placed either in or on the ditch.

475 All road crossings are to be filled and tamped to the surface of the ground. The tampers should be made of an iron blade seven inches long and five inches wide and one-half inch thick, having an iron handle attached thereto at least four feet long, and the blade to be slightly curved.

**PROTECTING DITCH.**

All roads that are crossed by or run near the line are to be so protected as not to be dangerous to travel, and the first party is to become responsible for any accident that may occur by reason of said ditch not being protected by barricades, lanterns, etc., or by reason of the existence of the said ditch. All road crossings are to be bridged after being opened, and in no case is any road to be so obstructed as to entirely prevent travel.

**VALVES, FITTINGS, ETC.**

Fittings and valves shall be placed in the line at such points as the first party's superintendent may direct, and after the line

is tested boxes shall be placed over each valve of such size and character as the superintendent of the first party may direct, and no extra charge shall be made for the extra digging required to put said fitting, valve and boxes in line, and at such places as boxes are put over valves, the surplus earth shall be hauled away if the land owner or tenant so desires.

### UNLOADING AND HAULING PIPE.

The first party will deliver the pipe and fittings on board cars at nearest railway stations along right-of-way as may be most convenient to said first party, and shall unload the cars and haul the pipe and fittings along the ditch where they may be required. All rights of way not covered by right of way agreements, to be settled for by the said first party.

### INJURY TO PERSONS OR PROPERTY.

In no case is the party of the second part to be held liable for any injury done to persons or property by reason of said work, and the said first party hereby agrees to become responsible for all claims for damages of whatsoever character, done or accasioned by reason of the construction of this line.

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### TOOLS. MATERIAL, ETC.

The first party shall furnish all the lead blocking, tools, lumber, stone, kettles, derricks, picks and shovels, etc., necessary for doing all the work.

### SUPERINTENDING OF WORK.

All of the above work shall be done to the satisfaction of the manager and the superintendent of the second party and they shall have the right under this contract in case the first party delays or refuses to do the work which under this contract it is their duty to do, to have the said work done at the expense of the first party.

### CHANGE OF ROUTE.

It is also agreed between the parties hereto that the said president of the second party may change the direction of the trench as at present staked out if he thinks proper to do so, but any claim for extra work done by reason of said change or for any other reason, must be presented to the superintendent of the

party of the second part within five days from the time said work is done.

"B" 3.

SPECIFICATION.

For one of a group of six natural gas compressors for pumping station at Greentown, Ind.

GENERAL PLAN.

The machine consists of a box bed or frame having the steam cylinder at one end, the gas compressing cylinder at the other, the main shaft extending across the machine and having on it two fly-wheels—one on each end. The cross head also extends across the bend and has a connecting rod on each end joined to crank pins in the fly-wheels. This general type of compressor is largely employed by the builders, the Norwalk Iron Works Company.

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STEAM CYLINDER.

The steam cylinder is twenty-four inches in diameter and thirty inches stroke. The piston to have double outside rings, a single inside ring, and to be set out by C springs and Jack colts. The cylinder heads to have air space covers, and the outside head to be polished. The main steam valves to be of the long D pattern and cut-off valves of the Meyer type to be used. The cut-off valves to be adjustable while the machine is in motion. The cylinder and sides of steam chest to be covered with narrow beaded black walnut staves secured by brass covered screws. All piston rods and valve rods to be of steel. The steam supply pipe to be six inches, the exhaust eight inches.,

PRESSURE REGULATOR.

A pressure regulator to be furnished.

SPEED REGULATOR.

A centrifugal speed regulator to be furnished. ,

CROSS HEAD.

The cross head to be swiveled in the center on the wrought iron coupling for piston rods.

## CONNECTING RODS.

The connecting rods to be of our standard pattern and to be furnished bright.

## MAIN SHAFT.

Of fine hammered iron, seven inches in diameter.

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## FLY WHEEL.

Fly wheels are seven feet six inches in diameter.

One crank pin is to extend beyond the connecting rod bearing to make provision for a drag link connection to the other engine should such connection hereafter be desirable.

## GAS CYLINDER

The air cylinder to be ten-inch bore and thirty-inch stroke. The movements of its piston are coincident with the movements of the steam piston. The gas cylinder is surrounded by water jacket. The working barrel is to be of cast iron as hard as can be accurately bored. The piston valves and all parts are calculated for a working pressure of 525 pounds per square inch.

## VALVES.

The gas inlet valves are of forged iron, the valve, head and valve stem being in one piece. The valves are accessible from the outside without moving cylinder head. Valve guards to be of flanged boiler plate.

## STUFFING BOXES.

Stuffing boxes have seals outside of the stuffing box proper.

## DUTY.

The capacity of the machine, when supplied with gas of 165 pounds pressure above the atmosphere, is 3,333,000 cubic feet of atmospheric bulk per twenty-five hours.

## PRESSURE.

The machine will take gas at 165 pounds pressure and deliver it at 525 pounds pressure.

**POWER.**

At the above mentioned work it will use 250 horse power.

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**INSTALLATION.**

The accompanying plans of piping for engine house shows six machines of the above description in position with space beside each one for another machine. This additional machine can be a duplicate of the one herein specified, or it can be adapted for taking gas at a low pressure and compressing it to 165 pounds, or it can be arranged to take gas from the machine herein described and deliver such gas at 1,000 pounds or more.

E. HILL,  
Treasurer.

(The drawings appended are omitted. On the back of said Exhibit C is the following):

"Whereas, in the suit of Egbert Jamieson against the Indiana Natural Gas and Oil Company and the Columbus Construction Company, the Supreme Court of the State of Indiana has rendered a decision whereby it is declared that under the statute of said state the volume of gas which may be lawfully stored or transported in said state shall not exceed a maximum of three hundred pounds pressure to the square inch.

"And, whereas, by said decision, the volume of gas which may be lawfully stored or transported in pipes has been greatly reduced and thereby it has become necessary to modify and amend Exhibit "C," referred to in and made a part of the contract between the said Indiana Natural Gas & Oil Company and the Columbus Construction Company, of date June 5, 1890.

Now, therefore, be it resolved, That the following drawings and specifications attached to this resolution and marked Exhibit "C" are hereby substituted for the original Exhibit "C," and the said drawings and specifications here shown are hereby agreed and declared to be Exhibit "C" mentioned in said contract and said Exhibit "C" hereto attached is hereby agreed to and made a part of said contract, of date June 5, 1890."

Endorsed.—"Exhibit C" referred to in contract between Indiana Natural Gas & Oil Company and Columbus Construction Company, 7-7191. Chas. T. Yerkes, President Indiana Natural Gas & Oil Company. C. E. Hequembourg, President Columbus Construction Company.



480 An Act of the General Assembly of the State of Indiana, in force March 4, 1891, is as follows:

1. Be it enacted by the General Assembly of the State of Indiana, that any person or persons, firm, company or corporation engaged in drilling for piping, transporting, using or selling natural gas, may transport or conduct the same through sound wrought or cast iron casings and pipes, tested to at least 400 pounds pressure to the square inch, provided such gas shall not be transported through pipes at a pressure exceeding 300 pounds per square inch, not otherwise than by the natural pressure of the gas flowing from the wells.

2. It is hereby declared to be unlawful for any person or persons, firm, company or corporation, to use any device for pumping, or any other artificial process of appliance for the purpose, or that shall have the effect of increasing the natural flow of natural gas from any well, or of increasing or maintaining the flow of natural gas through the pipes used for conveying or transporting the same.

3. Any person or persons, firm, company or corporation, violating any of the provisions of this act, shall be fined in any sum not less than one thousand dollars or more than ten thousand dollars, and may be enjoined from conveying and transporting natural gas through pipes, otherwise than this act provided; provided, that nothing in this section shall operate to prevent the use of nitroglycerine or other explosives for shooting any well or wells from which the gas is procured.

4. It is hereby declared that an emergency exists for the immediate taking effect of this act, and the same shall take effect from and after its passage."

Thereupon, when the said defendant offered the said contract together with the specifications and exhibits referred to, the plaintiff, by its counsel, objected to the evidence so offered, upon the ground that it was collateral matter, immaterial and irrelevant 481 to the issues on trial in this cause, and, further, upon the special ground that the statute of the State of Indiana, referred to in that contract and hereinbefore set forth, was contrary to the provisions of the Constitution of the United States of America, in that it was an attempt upon the part of the State of Indiana to impose a regulation upon commerce between the states, and that this statute was, also, if sought to be applied in aid of the contract offered in evidence and as against the contract in suit between the parties to this action, in contravention of that provision in the Federal Constitution which prohibits passage by a state of any law im-

pairing the obligation of a contract; which objection was overruled by the court, to which ruling of the court in overruling this objection, and admitting this evidence, plaintiff, by its counsel, then and there duly excepted, and thereupon the said contract, specifications and exhibits, as already stated, were read in evidence to the jury.

WILLIAM SMITH, called as a witness for plaintiff, out of order by consent, testified as follows:

"I live at Ainsworth, Indiana, and have lived there about twenty-three years. I know Mr. Button and Thomas Casbon. Heard their conversation when Button asked Casbon to come up here and testify. In that conversation Button did not say to Casbon: 'Will you come to Chicago and swear to what is not true for money?' and Casbon, reply, 'No, not for the whole gas line.'"

*Cross-Examination.*

"When counsel asked me the question as to what occurred between Button and Casbon, he was the first one that called my attention to the subject since what I heard said down there."

GEORGE H. REYNOLDS, a witness called on behalf of the defendant, testified as follows:

I am a mechanical engineer and have practiced that profession more than thirty-five years. Am now employed by the  
482 Crane Elevator Company of Chicago, and have been in their employ a little more than a dozen years. Prior to that time I was employed by the Delamater Iron Works of New York City, and was chief engineer of their works. They employed usually about 900 men; it reached 3,000 sometimes. They build steamboats, steamships, mining machinery, iron-making machinery, air compressors, hot air engines in great numbers, pumps, etc. I have had experience in using air in pipes under all pressures up to 2,000 pounds. The experience as to moderate pressures 100 to 150 pounds was acquired in air engines and in compressing engines and other plants used for mining operations. The experience for the higher pressures up to 2,000 pounds was acquired as consulting engineer for the Pneumatic Dynamite Gun Company of New York. I had supervision of all the plans in detail for the construction of the apparatus for testing dynamite guns and for operating the guns afterwards. I am the patentee and inventor of nearly all of the

devices which have been used for pneumatic dynamite gun work. I had two engagements with the Pneumatic Dynamite Gun Company, the first one previous to 1884, running through about two years, and after 1885 about five years more. Have had experience in compressing ammonia gas, carbolic acid gas and hydrogen gas. Have put up pipe lines for conveying compressed air in mines, and over the mountains to supply mines, and pipe work for ice machinery, street car work, experimentally. Under my personal observation, experience and direction have erected many miles of pipe to carry steam and water, water under all pressures from two pounds to a thousand pounds. I am familiar with the hydraulic power systems used in London, England; Manchester, Liverpool, Leeds, Paris, France, and some others. Have observed those systems in process of construction, and constructed them afterwards. Have had a very great experience in testing pipes and apparatus for conveying air or water at high pressure during all of the time of my connection with the Delamater Iron Works and with the Crane Elevator Company of Chicago. I am chief engineer of the Crane Elevator Company and as such have general supervision of the mechanical construction of the machines and apparatus made at the works, and have been brought in contact with the pressure systems in piping, seeing the pipes, tank and apparatus 483 put under pressure in the shop, and in many instances observing their operation when in actual use in Chicago, St. Louis, Cincinnati, Boston, New York, Philadelphia, Minneapolis, St. Paul and all the large cities of the country. I have seen pipe screwed together in line for conveying air, water, gas and oil at high pressure. Have seen the pipe lines laid in Pittsburgh, in the early days of laying pipe for gas, just outside of the city. Have had laid down under my own direction pipe lines for conveying water in St. Louis. I supervised and looked after the laying of pipe for the great Cupples warehouse, where the pressure carried was eight hundred pounds per square inch. There is no difference whatever as to the care necessary as to laying pipe for air, water or gas. If asked to lay pipe for three or four or five hundred pounds pressure, I would not care to know what kind of material was to be put into the pipe, so far as the care with which I would lay it. In laying pipe so as to have it tight the threads on the pipe must be inspected to see that they are not bruised or indented or distorted from the form of the die that cut them out. If threads are bruised or jammed or damaged to any considerable extent, the joint would leak. And the next precaution is to see that the threads in the coupling and the threads in the pipe itself are clean, free from pipe cuttings, which is very common to be left in the pipe from the die, and free from sand and from any foreign substance. If

pipe is screwed up with such foreign substance in it, it prevents the pipe from being screwed home, and when screwed as far as it can be, the foreign substance has prevented the threads from touching and forming such a union as to stop the escape of air or gas or whatever it is used for. The pipe has no tendency to clean itself from dirt, as it is screwed up; being tapered, it has the opposite tendency, and traps in whatever small dirt particles there may be in the joint. There must be such a degree of cleanness that there must be no iron castings, no sand, no hard foreign substance there at all. It is necessary to take the oil off that has been put on at the mill. By evaporation this becomes gummy and all sorts of grit, sand and cinders stick to it. That can usually be taken off by benzine with a piece of waste and a brush. Lye water can also be used. Concentrated lye or strong soda answers the same purpose as benzine. If the rust is deep, that should be taken off with a stiff wire brush or file, or something of that kind. Emory is never used by anybody that is an expert. A good lubricant must be used on the thread in the socket and on the pipe. Most common is ordinary white lead paint. Any kind of paint—thick yellow paint is good. A common thing in the commercial world is boiled oil and graphite. I think asphalt paint is a very good lubricant. If you put oil on a joint, that does not prevent the thread of the pipe from having close contact with the thread on the collar and cutting into it. By putting on the paint, it adheres and enables the pipe to be screwed in, metal to metal. Some of these lubricants have another object; they will harden after they are in place. Pipe allowed to stand a while with this lubricant becomes very gummy and hard. Where oil and graphite are used it does not have that effect, except after long exposure, but it enables the joints to be thoroughly screwed together. Plumbago is the common name for graphite. If one pipe comes in contact with another, being rolled off the car on to the ground and strikes upon the thread, the latter would be barely bruised, and it should not be put together until the bruise is corrected. The tendency would be where the collar struck the pipe to loosen the fit of the collar on the pipe, but I do not think it would have any effect on its tightness when afterwards laid in line, provided the coupling was properly screwed up afterwards. It could be taken off and the thread cleaned up and screwed up properly. These couplings in practice are always taken off anyhow and the pipe cleaned and screwed on again. If it was loosened it would simply need screwing a little. If the pipe was screwed in line without taking the collar off at all I would expect the pipe to leak at those points. A joint will always leak if the pipe is started in cross-threaded or become cross-threaded in screwing up; there is no exception to that. If pipes are flush one with

the other and enter properly without cross-threading, and properly lubricated, as to tightness it makes no difference whether it goes up twenty-three or twenty-four threads, one-half inch, three-485 quarters, an inch, an inch and a half or two inches. Where there is a pipe and collar with two inches of thread and the screwing is done with a machine of ten to twelve horse-power, and the operation of the machine is not stopped until the joint gets so tight that that of itself checks the motion of the machine, I would know that the joint would leak, because there is sufficient power in the engine to drive the pipe up into what we call the dull threads. The pipe is compressed, collapses, and the fit is taken away. I mean the contact of the threads from the shoulder down, which had been perfect up to the last turn of the pipe, has been destroyed by the larger threads on the pipe running into the coupling and collapsing the pipe, straining the coupling, taking away the fit which had been made beforehand in the other part of the pipe. In every case it would leak. It is what is known in pipe work as shoulder fit, that the pipe is screwed clear in on the shoulder, and that can be counted on always as leaking. It is a matter of trained experience in screwing the pipe together to watch so as not to let it go too far. A man will always know when it is screwed up by sounding it with a hammer. The practiced eye tells at once when it becomes metal against metal and stops screwing. There is never any account taken of the development of heat in screwing up a joint. Heat depends entirely on how the pipe is screwed up. Screwed up by hand very hard it does not develop but a trifle of heat, but if screwed up quickly with a steam engine they may have very great heat, which would indicate that there was great friction there. The practiced man, if it began heating immediately when he started to screw it in, would know right away it was either cross-threaded or dirt in it, or something wrong. But if it only begins to heat at the last turn or two he knows that it has gone along all right, and when heat develops that way he knows it is about time to quit. If he went on screwing beyond that the effect would be to run on the shoulder and leak. I have had experience in the matter of using lead for calking leaky joints in pipe, and have made observations on that subject. My opinion is that it is unnecessary, useless and absurd to use lead in any form in connection with a screwed joint. First, 486 if pipe is properly screwed into the collar lead calking is unnecessary. If it is used after the pipe has been properly screwed in it is pernicious. It will destroy the fit of the pipe in the coupling and cause it to leak. That is to say, it will cause the thread to leak. The lead may be calked in there so tight as to destroy the fit of the pipe by collapsing it just the same

as it would collapse by improper screwing of it. I do not mean that the pipe would be crushed entirely, but that the pipe would be made smaller or compressed. Under an immediate test the joint may appear to be tight, but a little later the lead joint, thread and all will leak. Lead is not stable. It can be driven in and made temporarily tight, but it will immediately flow out again. This is the same whether it is driven in as sheet lead or molten lead is poured in. The limit of elasticity of wrought iron may be taken at about 22,000 pounds to 24,000 pounds per square inch. The elasticity of lead is about 1,000 pounds, the tensile strength. The lead itself is not driven into a smaller space by calking, but the walls of the coupling or collar are enlarged a trifle, but the greatest change is in the size of the inner piece. Take an 8-inch pipe, the collar is by far the largest, so the effect of the lead is to expand the collar a little, but four times as much to close this pipe, but if lead is calked beyond its elastic limit it takes a permanent set and becomes permanently smaller. If in calking with lead the threads of iron are driven out of contact and the calking has been carried to an extent that there was a collapsing of this tube by compression beyond the elastic limit, then it would be a permanent leak; if not beyond the elastic limit, it will go back to its original position, but all the lubrication, the cement, that has been in there, and been in good position, and which could have kept it tight, is rendered useless, so far as keeping it tight is concerned, and the chances would be very greatly on the side of its leaking afterwards. By flowing of lead I do not mean that it becomes liquid, as when in a molten condition, but that if you fill a tube with lead and put in under pressure, and there was a hole one-sixteenth of an inch through, the lead will run out like putty or cheese, and ooze out before your eyes. All ductile metals, such as steel, iron, copper, tin, flow under pressure. The point at which they begin to flow differs according to the tensile strength, elasticity and hardness. I am familiar with the ordinary 8-inch line collar. The standard collar is much to be preferred to the Hequembourg collar, weighing something over forty pounds, for the reason that it will yield to its own inequalities and inequalities of the pipe being screwed into it. They will conform to each other without putting the pipe under undue stress in screwing it in. A standard collar will do it. All these collars, whether heavy or light, and all the pipes, whether heavy or not, are not round. They appear to be round but they are not, and in the process of screwing them together with the ordinary collar it conforms—it gives up a part of its own inequalities, and the pipe gives up a part, and the two come together and make a perfect joint, while with the heavier collar it does not yield, and the pipe has to do all the yielding



which it cannot do effectually. The standard collar will expand more than the Hequembourg collar. It may be taken as an average that a cubic inch of wrought iron will compress  $1/10,000$  of an inch for each ton of pressure placed upon it. That is the compressibility of iron; and the elongation of it may be taken roughly at an average of  $1/10,000$  of an inch for each ton of 2,240 pounds put upon it. If I pull a bar of iron which is one inch square on a side for each inch in length, it will expand  $1/10,000$  of an inch for each ton placed upon it, varying from a ten-thousandth to a thirteen-thousandth of an inch, according to the specimen of iron tested. The expansion of iron depends upon its thickness. A collar an inch thick will expand half as much as a collar half an inch thick, and substantially the same rule obtains as to compression. The apparatus employed here by the other side for the purpose of determining the taper in collars by which a steel gauge is laid on a flat table, on which a collar was clamped on a rough forged coupling, would amount simply to a fair kind of a guess as to what the taper was—nothing more. It would not be possible

with that kind of an instrument to determine the difference between five-eighths and three-quarters in the taper on two inches of thread. If it were possible to determine the taper accurately by an instrument like that, if it were applied at one point it would be entirely uncertain; if it were two it would be nearer correct, and if absolutely correct it would be necessary to try it at about one million points. There would be no accuracy whatever in such a determination, by applying it at two or even three points, and I doubt if there would be any if tried at even a million points, as long as the outside of the coupling is not turned off and made absolutely correct with the thread inside. The external inequalities on the surface of the coupling would affect the value and accuracy of that test. The threads and taper are not made with any reference to the outside line of the coupling, only what is incidental. I recognize in my practice the existence and propriety of a factor of safety in testing pipes. The rule as to steam boilers that has been followed by the United States Government for about forty years is still followed, and still the same rule as to steam boilers of the merchant marine, both passenger and freight vessels, tug-boats and so forth, is 150 pounds pressure for each 100 pounds of steam that is to be carried upon the boiler. The test of steam is applied by hydraulic pumps. I know of no other test, as to boilers, adopted by any of the municipalities or corporations other than that. In New York City there is a city law in regard to that. The city and state adopted the same standard that the United States Government adopts. I think in this city there is no law about it, but the custom that is followed is the United States rule. The caliper used



holds. by the plaintiff's witnesses is too crude and the coupling of too imperfect a character by its construction, or from the fact of its rough construction and the rough construction of the apparatus to give any sort of an idea as to whether actual expansion takes place in the pipe, or whether it is simply the rounding up which the pipe exhibits under pressure. It appeared in the shop that when there was no pressure on the pipe, a piece of paper would be held by the calipers at the top. When put under pressure the calipers were forced open and the papers would drop. That was repeated several times, and each time coming back to the point where 489 it held the paper again. At my suggestion the pipe was rolled half way around and the calipers applied at exactly right angles to the first application, and then it was shown that the paper did not drop, but was held much firmer, so that the calipers had to be adjusted to make it drop under a thousand pounds pressure. That proved first that the pipe was not round; that it got smaller in one direction of the pressure, and larger in the other direction. It may be that the pipe also, and it probably is true that the pipe was enlarged, and it proved absolutely that the pipe was not round. It did not prove anything else, while we may assume, because it is the law, that the iron would be stretched, that it did also stretch as well as to go into round. This test was made on the coupling itself, which was screwed on the pipe. I never heard of such a thing being done by an instrument of that kind; and that instrument as an instrument for measuring the amount of expansion in a pipe is too crude to measure such a thing with any accuracy whatever. The expansion and contraction of metals under pressure is determined by the law of compression and extension of metals under pressures. It is known how much each metal will compress, and how much it will extend under certain load. It is known, a bar of iron, and pipes, and all sorts of pieces are put into testing machines, and it is found out exactly what a certain metal will do, how it will behave under pressure and under strain, and from that the law is laid down. It is not measured before your eyes in the way we measure cordwood or measure eight-inch pipe. If the points of contact with the caliper were not on the true ends of the diameter, that would change the result somewhat, a little. In order to ascertain accurately the amount of expansion in any kind of a pipe or collar, you would have to caliper a billion diameters. You would not then be certain that you were right; two billion would be nearer right. I saw the experiments to which I have just alluded, since this case was on trial, at Tarrant's shop on the North Side, at which Judge Wing, Mr. Hequembourg and several gentlemen representing the Crane Company were also present.

Thereupon witness proceeds to narrate the occurrences at  
490 Tarrant's shop, substantially as given in the testimony of  
Foster, and as also testified to by Kilgore. He also testifies  
to the request made by counsel for the defendant to take the col-  
lars then at Tarrant's shop, as already given in testimony of  
Foster.

He then proceeds to testify to the experiments conducted on  
the Kaufman couplings taken from the court room to the Crane  
shops, as given in the testimony of Foster and as testified to by  
Kilgore.

*Re-direct Examination.*

If air or gas was flowing from a well freely through pipe, and  
the pipe was suddenly closed by closing the valve, the pressure  
would be very slight. The pressure would rise between the valve  
and the well until it equalized whatever pressure was in the well.  
Now, here is a pipe line laid from a well, say, to the City of  
Chicago. Somewhere on that line is a pumping plant which re-  
ceives the gas from the well at some pressure, say 250 pounds, and  
delivers it into the line beyond the pump at 300 pounds, and be-  
tween the pump and Chicago somewhere, may be one mile or ten  
miles from the pump, you suddenly close a valve and the pump  
keeps on, the pressure rises slowly, how slowly or how rapidly  
will depend entirely upon how far away the valve was. If it  
was near by it would rise quite rapidly until relieved by some  
means. It would rise fast or slow exactly in proportion to the  
distance the valve was away from the compressor. There are a  
number of things in common use to provide against this. In air  
compressing machinery there is an arrangement by which, when  
the pressure rises in the line, the pump slows down just in propor-  
tion as the pressure rises. In all pumping plants that I am familiar  
with for pumping water, air or gas, the steam pistons are in pro-  
portion to the compressing pistons, and any considerable rise of  
pressure stops the pump. Other devices are an ordinary safety  
valve upon the pressure line, and a regulator, which is controlled  
by the pressure by which, as the pressure rises in the discharge  
main, it shuts off the steam on the compressor, slows it down, and  
finally stops it if the pressure rises enough. Another method is to  
allow the pressure engine to continue to run, but is made in-  
491 operative through any excess of pressure; and the final one,  
with the pressure carried upon the boiler at a point where  
the pressure will not drive the engine to any extent above the  
normal pressure. Any of these appliances, with the exception of  
pressure of steam on the boiler itself, will control the pressure  
within a very few pounds—four or five pounds—of the regular

Testi-  
Geo

ynolds. pressure with which they are working, and there is no difficulty in applying these things to gas lines. The chance of such an accident as the closing of a gate valve in a gas line is very remote. There would be very little probability of an accident of this kind with the Ludlow gate, if properly adjusted.

*Re-cross Examination.*

I did not testify at the first or second trial of this case.

LYMAN E. COOLEY, witness called for the defendant, testified as follows:

I am by profession a civil engineer, and have practiced that profession twenty-three years. Obtained my professional education at the Polytechnic School at Troy, New York, and have practiced it in Illinois, Missouri and Nebraska. Have been for twenty or twenty-three years in Chicago, with the exception of six years, when I was engaged in Western River improvements. My attention has been particularly given to the construction of public works. I have been a member of the Western Society of Engineers for twenty-one years, president of it two years; professor of civil engineering at the Northwestern University three years. I wrote the first report upon the subject of the Drainage Canal in 1885; was chief assistant to the Herring Commission in 1886 and 1887, which was the commission that made the preliminary survey and planned the work. Was consulting engineer of the City of Chicago in the preparation of the law; consulting engineer of the State Board of Health when they took up the question; consulting engineer of the committee to determine the boundaries of the district. I was trustee of the district up to the middle of last October, and I have been intimately connected with every phase of it from the beginning 492 up to the present time. Also have been a member of the International Deep Waterways Commission, appointed under the Act of Congress, by the President to consider upon the subject of ocean navigation between the Great Lakes and the Atlantic seaboard, in connection with a similar commission or board appointed by the Dominion of Canada, and am still a member of that commission. I expect to visit Nicaragua in the course of the winter, with about twenty of the leading men of this country. I have been asked repeatedly to have an active connection with the Nicaragua project and have been giving it study and preparation. My experience has brought me in contact with questions relating to the expansion

and other properties of metals and the operation of pipe lines under pressure with air and water. In my six years of river practice we did all of our work by day labor, and had great numbers of devices, pipe lines and ordinary fittings for machinery to specify and carry out and operate our work. In the Sanitary District of Chicago we had pipe lines on fifteen sections of the canal, by which air was taken under pressure from compressing works and distributed over fifteen miles in the operation of drills and other appliances in the excavation of the channel. I consider the ordinary standard collar preferable to the Hequembourg collar simply because it is strong enough, and any addition to that would be a detriment and not a benefit. The way pipe and fittings are made are not truly circular; they are more or less distorted, and the question of the joint is the question of the collar, and the pipe conforming to each other provided there is sufficient strength; the more elasticity the easier it is accomplished. If the pipe and collar are somewhere near the same weight the process of adjustment takes place both in the pipe and collar. If there is a great disproportion in weight it takes effect wholly in the pipe. I do not think it makes so good a joint. I might illustrate that by saying if the pipe was equally rigid it would be almost impossible to make a joint at all. I do not think any engineer who is familiar with the behavior of materials will specify lead for pressures anywhere in the vicinity of 1,000 pounds, because the elasticity of lead as given in every authority is from 1,000 to 1,100 pounds. Pressures in that vicinity will make it flow or give. I

493 should think the process resorted to by the plaintiff's witness, Tarrant, by means of a steel gauge applied to a collar clamped on a flat surface, would be a very rough approximation for the purpose of ascertaining the slant of taper in the collar, assuming that the gauge is applied at only one point selected at random in the collar. The collar is not true externally. If turned up absolutely true, parallel to the taps that made the thread, then a measurement at any point would give the taper. In order to get anything like an accurate result, you would have to take several—half a dozen at least—or a dozen measurements. I would not consider it possible to obtain accurate results with a device like the caliper used by the plaintiff's witnesses in measuring pipe for expansion at Tarrant's shop. In order to obtain results of even approximate accuracy, you would measure with those on several opposite diameters; six is better than four; ten is better than six. If anything important depended on it, I should want at least half a dozen diameters. It could be obtained in some other way easier and quicker. If I wish to obtain the expansion of a section of pipe, I would pump into it water and see how many cubic inches of water I could pump into it from zero up to 1,000 pounds after the pipe

was absolutely filled. That would give me the true expansion of the pipe as nearly as it could be measured. But it would be subject to error unless it were a true circle. The trouble is that none of these pipes are regular figures; they are neither circles nor true ellipses; if they were two diameters would give it, but if not, it does not follow that either of those two diameters would give any result that could be relied on. It is an approximation in any event. Change of temperature upon a pipe buried three feet in the ground would vary probably 40 degrees. This variation of temperature would produce a strain upon a line of pipe thus buried. The expansion would be about one-sixth of a foot in a thousand feet. The effect of this strain on them would be upon the joint about 4,000 pounds. I do not think it would be sufficient to impair the tightness of a joint in line. A few years ago it was thought absolutely essential to provide for longitudinal expansion. Within the last three or four years they are welding up street-railroad rails solid, making a continuous joint. It was done in Cleveland four years ago, and I believe the same thing is being done in this city, and it has been proposed and has been experimented upon in regard to railways. There is no material difference in this respect between iron and steel rails.

Whereupon the witness proceeded to testify that he was present at the experiments made at the shops of the Crane Company upon the Kaufman collars, and narrated what occurred there, substantially as given in the testimony of witness Foster, and testified to by Reynolds and Kilgore. All of this evidence, both of this and other witnesses for the defendant, in so far as it related to the experiments conducted on these collars at the Crane Company's shops, was objected to by the plaintiff, on the ground that it was immaterial and irrelevant, and referred to matters collateral to the issues of the trial in this case. But the objection to this evidence was overruled by the court, and the plaintiff by its counsel then and there duly excepted to such ruling.

#### *Cross-Examination.*

I have never personally laid a pipe line nor gone into the field and superintended the laying and screwing of it together, and have never had anything to do with what is called an eight-inch standard line for the conveying of natural gas. I have seen eight-inch pipe laid on the Sanitary Canal for the purpose of conveying air. Am not in the employ of the Crane Company at all, except in my capacity as an expert.

CHRIST OLDS, witness, was called upon the part of the defendant, and testified as follows:

I live in Indiana. Worked west of Hobart on the gas pipe line, three days, in 1896, in November, digging holes. I dug ten holes each day. Frank Coyle was the name of my boss. The holes were about two feet wide, four feet long and three feet deep. They were just about half a foot below the joints, and some a foot, so that he could get under there with a hammer and chisel and calk them. Some of the joints in the holes that I dug had been calked, as I could see. Those thirty holes were dug in a distance of about four miles on the pipe line.

495 WILLIAM M. POTTER, recalled on behalf of defendant, testified as follows:

In the early part of November, of this year, with Attorney Barnard, I visited George Kleine in Indiana where he lives. At that time and place Kleine said in substance to Barnard that the pipe, referring to the gas pipe brought into Ainsworth, for this gas line was brought to the top of the car, referring to the gondola cars then at Ainsworth, loaded with pipe, with ropes and then allowed to go its own way down to the pile below. And he then said that frequently one end of the pipe would go down before the other end while he was unloading, and strike the pipe that had been before unloaded there, and that in unloading he had seen thread protectors knocked off the pipe by rolling down the skids against other pipe, and that, as the pipe was unloaded and struck other pipe, it made a loud noise.

Thereupon the defendant offered a letter of May 25, 1891, from Williams, Holt & Wheeler, attorneys for the defendant company, to the Columbus Construction Company, relating to the Pittsburgh Tube Company's claim, and an enclosure of a letter from the Pittsburgh Tube Company to the Crane Company, dated May 22, 1891, which are as follows:

MAY 25, 1891.

*Columbus Construction Company, Chicago, Ills.*

GENTLEMEN: As you are aware, the Crane Company, under an agreement with you, has made contracts with various persons to furnish you large quantities of iron pipe, all of which contracts have

been reported to you from time to time. Among others, the Pittsburgh Tube Company appears to have purchased iron to fulfill its contract, and now notifies the Crane Company that a considerable part of the pipe manufactured and iron purchased remains on their hands, and they cannot longer conveniently carry the same. They accordingly serve notice that unless the pipe and iron are in some way taken care of by June 1st, they will sell the same and hold us responsible for any loss that may occur.

496 As this contract was made for your benefit, and you are the party ultimately, if not immediately, responsible, we hereby advise you of the facts stated and enclose a copy of the letter which we have just received from the Pittsburgh Tube Company, under date of May 22d. Please instruct us what action you desire to have taken for your protection.

Very truly yours.

WILLIAMS, HOLT & WHEELER,  
*Attys. for Crane Company.*

The letter from the Pittsburgh Tube Company referred to in the foregoing letter is substantially as therein indicated and hence is not further here inserted.

497 Defendant offered in evidence deposition of ANTHONY H. BAHLE, taken Pittsburg, Pennsylvania, November 4, 1893, which was in substance as follows:

In the summer of 1890 was cutting pipe for Pittsburg Tube Works and inspecting eight-inch pipe for Charles Vick at Pittsburg Tube Works about two or three weeks, and at Spang, Chalfant & Company at Etna about two months.

Was required to see that all threads were perfect and of right length, and did not leak while being tested, that there were no blisters, sand-holes or flaws in iron, or anything like that, also as to weight and length. Under my personal inspection I averaged at Etna about fifty lengths and at Pittsburg about fifty-five to sixty a day. Pipe was tested with water at 1,000 pounds to the square inch. Test included the coupling. I watched the gauge of every pipe. Looked out particularly for the threads and any leakage, especially about the socket, for bad blisters, sand-holes, etc. Used the most particular care in examining every one. Had special instructions to pay particular care more than in ordinary inspection. Coupling at one end was included in every test. In case of any air coming out through coupling or pipe or anything like steam, I always condemned it.



Defective pipe were thrown out and put on separate pile so they never came back again. In preparing for shipment an iron ring about one and one-half inches wide was put on end of pipe to protect bare thread.

*Cross-Examination.*

Greatest number of joints in any one test was two, *i. e.*, two short pieces put together to make a length of fifteen feet. Tests were made with water. I have had no experience in testing pipe in line for natural gas. I oversaw tests of pipe. Looked them over before they went into the tester, and afterwards watched them in the tester. Have no connection with the companies for which I rendered the service.

498 The defendant also offered in evidence deposition of MORRISON A. S. VICK, which is in substance as follows:

In the summer of 1890 was inspecting eight-inch line pipe at Pittsburg Tube Works, and about a day at Spang-Chalfant mills. Was employed by Charles T. Vick. Was at Etna not exceeding two days, and Pittsburg Tube Works at least ten or twelve weeks. My duties were to get out as good pipe as possible. Had to see that the pipe was good all over and was tested properly. Looked at the threads inside the pipe and outside, at welds and sockets. Watched, in testing for socket leaks and blisters. I inspected all the Pittsburg Tube Works pipe tapped in the day time. Applied 1,000 pounds hydraulic pressure to the square inch. If pipe stood the pressure all right, it was thrown on the buggy. I kept my eye on gauge to see that pressure was right. After testing pipe was marked. It was inspected for blisters, sand-holes, bad welds and bad threads. I used my very best care. Was instructed by C. T. Vick to get as good pipe as it was possible to get. A thousand pounds hydraulic pressure was put on. The socket was on the pipe and was included in the test. Screw threads of socket had same test as pipe. Any pipe found defective was taken away. If a socket leaker or blower it was taken to machine and end cut off. If blistered, was put on pile and left there.

*Cross-Examination.*

Two short pieces put together with a socket is called a splice. Such pieces were tested as if they were one long joint. Greatest number of joints in any one test was two. Tests were made with water. I have had no experience in testing pipe in line. I in-

spected pipe. Mill furnished the men, I stood over work, and watched. Have no present relation with either of the companies I worked for.

Vick. 500 The defendant also offered in evidence deposition of CHARLES T. VICK, which is in substance as follows:

I am a contracting pipe inspector. Have inspected line pipe since spring of 1886. Have inspected all natural gas lines ever laid in Western Pennsylvania excepting Baden and part of the Charters. In the summer of 1890 was inspecting 8-inch pipe manufactured for Crane Company at Spang, Chalfant & Co.'s works, and at Pittsburg Tube Company. Had nothing to do with shipment of pipe, but know where some of it went, because I found some of it afterward in the Indiana gas fields. Morrison A. S. Vick, Frank Arnold, Andrew, Ralph and Anthony Bahle were my assistant inspectors. My duties were to secure as good pipe as it was possible for mills to turn out. My instructions from Crane Company were so exacting that I was continually fighting with the mills. Mr. Forman gave me written instructions which I have since lost or destroyed. They were, as near as I can remember, that pipe was to be standard 8-inch line, 28 pounds to the foot and 8 threads  $2\frac{1}{4}$  inches in length. Threads must be perfect in every respect. Pipe free from sand holes, blisters, imperfect welds, and first-class in every respect. In speaking of a joint of pipe, of course collar is included. Joint of pipe without a collar is like a man without a head. Forman's instructions were lived up to as near as possible. They were so exacting I was continually in trouble with mill owners by laying out pipe with such small defects that it could not affect the pipe at all. Tests were 1,000 pounds hydraulic, applied at pump with gauge. After 1,000 pounds were on pipe it was struck with a hammer two or three times. This is the most severe test it is possible to give. If pipe was perfect and did

501 not leak or weaken, we accepted it. If it did weaken we threw it out. Before pipe went into pump my inspectors carefully went over each and every joint, inspected threads to see if they were full and perfect. Looked for sand-holes, blisters, buckles or bad welds, and also to see if sockets were perfect. If pipe showed the least weakness we at once rejected it. None was accepted that was not perfect, because our orders were so particular.

Condemned pipe was marked "bad" and thrown out. Spliced pipe was inspected over again. My instructions were to give pipe a thousand pounds test at the mill. Know nothing about pressure it was to stand on line. Tests were made by single lengths. This

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is just as valid a test so far as the joint itself is concerned. In running the line together the putting together of the joint makes a vast difference. You must have competent men to put the line together, as well as mechanics to make the pipe. The single length test is sufficient to test the joint. If pipe were 100 feet long it would not be a better test. It would weaken the pipe and wear the threads to be screwing and unscrewing it and handling it. Threads were tested by feeling with the hands, carefully wiping off with waste, and going over them as carefully as possible, to see that they were perfectly full in every respect and perfect. None of the pipe came under my personal examination unless there was some question. My assistants were all capable men and had instructions from me, which were a repetition of my instructions from Forman. I can vouch for the faithfulness of my assistants. In preparing for shipment threads were protected by a ring. The Pittsburg Tube Works would cut defective couplings into three or four pieces and use them as rings. Etna used a patent thread protector which was made of iron and paper. The pipe left us at the pumps, and as far as I know was shipped in that condition, which was first-class condition. I never knew of any pipe being tested except with hydraulic pressure at mills. Am familiar with process of testing at all mills in this part of the country.

#### *Cross-Examination.*

Tests were made with only one joint except in the case of spliced joints. Were made with water. Have had no experience in testing pipe in line. I was overlooking my employes all the time. I saw about one-fifth, anyhow, of the pipe tested, and that pipe I saw was perfect. At present have no business relations with the Crane Company.

502 Defendant also offered in evidence deposition of D. E. LYON, which is in substance as follows:

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Am president of the Pittsburg Tube Company, and was so in 1890. On July 2, 1890, acting for that company. I sold Crane Company forty miles of 8-inch line pipe. No written contract was ever signed by the Pittsburg Tube Company. Up to October 20, 1890, about seventeen miles of 8-inch pipe was shipped, on this order, to Columbus Construction Company. Iron was of excellent quality, and orders were given for extraordinary care in making and shipping it. From close observation I have every reason to believe that such orders were carried out and that pipe shipped was of the

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finest quality. A sample coupling was sent to us by National Tube Company, at the instance of Crane Company, and we were requested by Crane Company to conform to sample in making couplings. Comparison of sample with our usual 8-inch line coupling showed thread and taper the same. The only difference was that sample was recessed one-eighth of an inch deeper, a very unimportant difference, to which our couplings were made to conform. In this comparison my statement is based on information received from our mill superintendent.

*Cross-Examination.*

Did not actually handle or test any of the pipe or couplings made for the Crane Company, but kept myself fully informed by frequent personal observation as to what was being done, and whether proper care was being taken to produce good pipe that would pass the very rigid examination of the inspector sent to the mill by the Crane Company. Have had no experience in testing pipe in line. Sample furnished by Crane Company was not a special pattern, but was the same as the coupling usually made for 8-inch line pipe.

I am president and a stockholder of the Pittsburg Tube Company.

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Arnold.  
504 Defendant also offered in evidence deposition of FRANK ARNOLD, which is in substance as follows :

In the summer of 1890 was hired by Charles Vick to inspect 8-inch pipe for Crane Company at Pittsburg Tube Works. Was employed there eight or nine nights. My duties were to inspect pipe. To see that it was in good condition, free from blisters, flaws, good threads and sockets, good in every respect. About 500 or 600 pieces came under my personal inspection. One hundred pound hydraulic pressure was applied. I watched gauge every time to see it up to 1,000 pounds. If pipe was defective it would burst. If socket was not right it would leak. I hammered pipe freely before they tested. Used the best of care. Had written instructions now destroyed, to see that everything was exact. Examined pipe for blisters, sand-holes, and saw that it had tapered threads and sockets. Know nothing about pressure pipe was to stand in line. Was to stand 1,000 pounds at mill. If bad seams pipe went back to furnace. If hole in center pipe would be cut in two and a spliced joint made, bad socket replaced, bad thread cut off and new thread cut on. All this was reinspected. "O. K." was marked on the

good pipe, other unmarked pipe were defective. Old sockets were cut into three pieces, used to protect threads.

*Cross-Examination.*

No more than two couplings tested at one time. Tested with water. Have had no experience testing pipe in line. I saw 500 or 600 lengths tested. Have no relations with the company.

505 Defendant also offered in evidence deposition of HENRY L. DE  
ECKLEY, which was in substance, as follows:

In the summer of 1890 I was tally clerk of the Pittsburg Tube Company. I remember an order of eight-inch line pipe manufactured and shipped to the Crane Company. It was my duty to tally and inspect it closely after it was ready to ship, also to weigh it, mark weight on and load it in car and ship it. Had to see that there were no defects like sand holes, bad threads, etc. All the pipe in this order came under my notice. When shipped it was in good condition. Had iron rings over threads to protect them, was protected well. Weight had to be a certain standard and I saw that it did. Don't remember what the standard was. Anything light I put out and it went into stock for other orders.

*Cross-Examination.*

Have been employed by Pittsburg Tube Company five or six years, saw ninety cars loaded for Crane Company. The destination I don't remember. Some went to Ainsworth, Indiana, some to Wilder, and some to Chicago. Have no relations now with the company.

506 Defendant also offered in evidence deposition of DENNIS MC- Dep  
FADDEN, which is in substance as follows: M

Have been working in pipe business seven or eight years, perhaps more. In the summer of 1890 was from August 3d or 4th, at Paige Tube Works, Warren, Ohio, and worked there the balance of the summer. I remember they were making the order of eight-inch line pipe for Crane Company when I went there as inspector employed by the mill to see that pipe went out in good shape. In inspecting this order, had to see that pipe was good, threads good, right amount of threads and that pipe could stand pressure. Threads

had to be two and one-half inches, and eight to the inch. Don't remember pressure test. Any pipe I saw was put to required pressure. Did not see all of the pipe in the pump. The men working at test pump were under my control. I think I was watching as carefully as I could. Don't know exactly how much I saw, but nearly all that went out during my turn. Three-fourths and probably more. Think test was 1,000 pounds, but cannot remember. Before pipe was put into pump they were sitting on trucks that we could look all the way around and through, and we inspected the threads. Flaws would generally be seen before they went into the pump. Then pressure was put on, and if a bad place was in the pipe it would burst or leak. Threads were tested by examination and pressure. No pipe was allowed to go out without protector on the threads. Any defective pipe had to be fixed before it could be shipped.

*Cross-Examination.*

Greatest number of joints in any one test was two, tested with water. Have had no experience on line. Took no part in tests, except to see that the men were careful and did their duty. Have no relations with the company.

507 Defendant also offered in evidence deposition of THOMAS J. CREHAN, which is in substance as follows:

I am foreman at Olivers Bolt Works, Pittsburg. In the summer of 1890 was employed at Paige Tube Works, Warren, Ohio. I remember an order of eight-inch line pipe manufactured there for Crane Company. Was hired as inspector by the Tube Works to watch that good work was turned out in every respect; that there were good threads, good couplings, proper pressure to each. I gave best care I could and tried to do what was right. Could not tell about this one special order. All the time that I was there, saw most of what went out during my turn. Looked at pipe on trucks before they went to threading machine after cut, looked for full thread, and to couplings to see that they were all right. Threads were tested by looking at them and with a gauge screwed on two or three times a day to see that they were running the right size. This gauge was just a standard coupling. Pipe had a protector on the other end from the coupling two inches wide, or more. Pipe found defective was sent to furnace or scrap pile.

*Cross-Examination.*

Greatest number of joints in one test was two, made with water. Have had no experience in testing in line. I inspected and watched the tests. Suppose I personally saw about three-fourths of the pipe tested. Have no relations with the company now.

508 Defendant also offered in evidence deposition of H. W. POWELL, which was in substance as follows:

In the summer of 1890 was shipping clerk for Pittsburg Tube Company. I remember order of eight-inch line pipe manufactured for Crane Company. Think from eighty-five to ninety-five cars were shipped. I saw about two-thirds of it. Every piece of pipe had to be standard weight and length. If weight was not sufficient we threw it out. I had Eckley there for that purpose. Consider him the best man I ever had work for me. We were more particular about this order than any other that ever left the works. My instructions were so rigid I had to give it particular inspection. The Crane Company had Vick's man right there all the time watching us weighing and loading. Even a blister as big as a walnut would be enough, and we would not send it, although it might be over weight. Pipe when shipped was in elegant condition, could not be in better condition, had good thread protectors and we were very careful in putting on the cars. The cars were right along our platform. The men were very careful. Mr. Lyon instructed me time and again to be very careful about loading that pipe and the inspection. We have sold all of the rejected pipe, I think since.

*Cross-Examination.*

Never had any experience in manufacturing pipe, but had in inspecting and shipping. Had been inspecting there for a couple of years. I personally saw loaded about two-thirds of the Crane order. We shipped some to Millers and Ainsworth and Grand Crossing; can't remember all points we shipped to, and don't remember the dates. Have no relations with the company now.



509 Defendant also offered in evidence deposition of CHARLES C. HENDERSON, which was in substance as follows:

I am, and was in 1890, assistant manager of Spang, Chalfant & Co.'s Tube Works; had entire charge of the shipping department. I remember the Crane order. There were eighty car-loads 79,764 feet 11 inches. I saw all of it. Had general supervision of the pipe as it went along. Saw the tests of a great deal of it. Saw all the cars after they were loaded. Looked in a general way, but could not inspect each piece. In preparing for shipment we exercised very great care. Extra special care was taken with that order. Threads were protected by rings. Car-loads were not large; did not average over 1,000 feet; usual average is 1,600 to 1,700 feet. When pipe left the works it was first-class in every respect.

*Cross-Examination.*

Have been around pipe mills for fourteen years. I saw all the Crane pipe loaded—80 cars were shipped between August 4th and October 1, 1890, namely, 11 cars to 46th street, Chicago; Hobart, Indiana, 7; Liverpool, Indiana, 22; Whitney, Indiana, 6; Vermont, Indiana, 11; Clark, Indiana, 12; Tolleston, Indiana, 11. As an employee of the company was so in 1890.

Defendant also offered in evidence deposition of GEORGE A. CHALFANT, which was in substance as follows:

I am and was in 1890 manager of the Spang, Chalfant Company. They made the pipe that was shipped under the Crane contract. I saw a large portion of it. It was first-class pipe. We have been manufacturing here over thirty years and never took any more care than we did with this pipe. We tested it to 1,000 pounds, and none was shipped that was in any way defective. It was all in first-class order when loaded on cars. They sent us a sample coupling here. Think made by the National Tube Works Company. We made ours exactly the same—in taper, weight and every respect. Don't remember the dimensions. It was about the same as the ordinary eight-inch line sockets. This model was exactly followed in every particular. The usual and customary test of line pipe at Eastern Tube Works for the purpose of ascertaining capacity to stand pressure in line, is by filling with water and putting hydraulic pressure on.

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*Cross-Examination.*

Did not personally assist in any of the manufacture. Did not make any tests, but saw a large amount of it tested. Have seen pipe tested with natural gas in several lines. Have seen as high as 800 pounds natural gas on line. The sample collar used was the collar usually made for eight-inch line pipe. I am a partner in Spang, Chalfant & Company.

511 Defendant also offered in evidence deposition of JOHN TRAU-GOTT SHULTZ, which is in substance as follows:

In 1890 was working for Spang, Chalfant & Company; was testing pipe for six years. Watched gauge and threads and sockets. Counted threads on end of pipe to see that they were all right number. Saw tested at 1,000 pounds hydraulic. Pipe found leaking was marked and put back.

*Cross-Examination.*

Greatest number of joints in one test, two. Material used, water. Have had no experience of test in line. I worked at hydraulic pump. Tested all that was made on my turn. Have no relation with the company now.

Defendant also offered in evidence deposition of MANSFIELD B. LEA, which was in substance as follows:

I am, and was in 1890, foreman of machine shops and coupling department of Spang, Chalfant & Company. Have been employed in tap-making and coupling-making about 15 years. I remember the Crane order. My business was to look after manufacture of couplings, and see that work was all turned out in perfect shape. The best of care was used on tests to ensure accuracy of taper and good quality in threads of couplings by taking calipers and measuring to see that diameter and taper were right. We tested threads with an instrument adapted for threads, and for testing the tap with which the thread is made. Number of threads to inch was tested by measurements on a scale marked on side of tool. As to quality I examined by eye to see that threads were full and sharp. We ran every socket on gauge to see they were right size. This is just a thread cut on a pipe, and every collar is washed out carefully and screwed on for that purpose. We ran it on by hand so far and

allowed them so many threads to pull it on when they put the line together. In eighteen threads the sockets are cut  $2\frac{1}{2}$  inches at each end. We would run these sockets on about 12 threads by hand.

This left four threads to be turned with the tongs afterwards. 512 We used a sample that was sent here. I followed it as closely as I could. The taper was  $\frac{5}{8}$ ths to a foot. We made gauge to fit so as to work to the sample. I saw all the sockets for this order.

*Cross-Examination.*

I personally assisted in the manufacture of the sockets. Applied caliper test and gauge. Taper tap will last about three weeks. Have had no experience in laying line. The sample was a special pattern sent here, but was nothing more than a regular 8-inch gas line collar. I am an employe of the company.

Defendant also offered in evidence deposition of JOSEPH HAMMERLIN, which is in substance as follows:

I am, and was in 1890, a tester of 8-inch line pipe, in Spang, Chalfant & Company Works. I tested Crane pipe. Was on thread end of pump. My duty was to see that pipe was put in right, and was good. Watched my end and all over pipe. Pipe would remain on the testing bench under pressure, from five to ten minutes. We tested all the pipe to 1,000 or more pounds. If only a drop leaked through we had to put it out. Any leakers, or blistered pipe, bad welds, or sand holes did not go into this order.

*Cross-Examination.*

Only one joint is in test. Material, water. Have had no experience in line; I saw all the pipe on my turn. Am an employe of the company.

Defendant also offered in evidence deposition of SAMUEL A. ASHBAUGH, which is in substance as follows:

In 1890 was foreman of thread department of Spang, Chalfant & Company. Remember the Crane order for line pipe. It was required to be good and perfect, Suppose I saw all that was made, on my turn. Was tested at 1,000 pounds hydraulic. Threads on pipe were tested with ring gauge and a standard collar. Then we inspected them carefully by eye. That was the most important

part. Tests were made in single lengths with collar. I think it is a perfect test. When it passes that I think it can stand almost anything. Think a single length is as good, if the pipe is properly put together in the line. If screwed together to be tested, threads would become worn and loose, and not so good next time. In preparing for shipment a ring was screwed on thread end of pipe.

Bad pipe were piled in yard. Some run down for 513 smaller pipe and some used in other lines. When this pipe left my hands I think it was in perfect condition.

*Cross-Examination.*

Greatest number of joints in any test was one. Material, water. Have had no experience outside of the works. I tested the threads personally, suppose I saw about half of them. Am an employe of the company.

Defendant also offered in evidence deposition of GEORGE R. INGHAM, which is, in substance, as follows: De

I am and was in 1890 pipe-loader for Spang-Chalfant Company. I remember Crane order. Loaded pipe on cars and tallied it. Weighed some of it. Pipe was lifted into car, not dropped. I was as careful as I could be. Was close to the pipe, and could see it from one end to the other, as it was rolled on the bars. Defective pipe was thrown back into mill. When shipped was all right. There were rings on end of each piece.

*Cross-Examination.*

Had been employed about mills for a little over three years. I loaded most of the Crane order. There were two other loaders. Don't know how many car-loads. First I shipped was about August 12th. Don't remember where cars went to. Am an employe of the company.

Defendant also offered in evidence deposition of J. H. CRANE, which is, in substance, as follows: Dep

I am and was in 1890 shipping clerk for Spang, Chalfant & Company. Remember the Crane order. Loaded some of it in cars, and kept tally. Pipe was weighed before it was loaded. Used all the care that could be used to see that no threads got battered.

Saw all the pipe that was shipped while I was on duty. It would be turned over and over as it would be rolled down into the car. Any that was defective was marked with paint around the defect. A defective pipe would not go over the bench to me. It was in good condition when shipped, and the threads all had rings on them.

*Cross-Examination.*

Have had no experience in manufacturing pipe. Don't know how many cars I loaded. Think Ingham loaded more than I did. Don't remember destination. Am an employe of the company.

514 Defendant also offered in evidence the deposition of CHARLES APPELEGATE, which is, in substance, as follows:

I am loader of pipes for the Delaware Iron Works at Newcastle, Delaware, same occupation in 1890. I remember the Crane Company order manufactured that summer, was employed at that time as loader. I know they were shipped to Chicago to Crane Company. My duties were to tally each length and see it put on the cars. All pipe consigned to Crane Company was loaded under my personal supervision. I could tell whether the pipe was all right by the marks on it. If defective there would be marks on it. I looked through to see they were clear of blisters. There was no defective pipe shipped that I know of. They were all in good condition.

*Cross-Examination.*

I never helped make any pipe. Have been loader for about five years. Before that was laborer in the shops. Saw all the pipe loaded. Can not tell just how much there was. Think about ninety car-loads of eight inch pipe. Did not know where pipe was shipped. Have nothing to do with that. Am an employe of the company.

The defendant also offered in evidence the deposition of JAMES H. BENNETT, which is, in substance, as follows:

I am prover for Delaware Iron Company at Newcastle, same occupation in 1890. I proved the six and eight-inch line pipe in the summer of 1890, but did not know then where they were going. I put them over the pump and all that were bad were chalked off. Never knew till last spring that the pipe was going to Crane Company. Cannot tell how much I tested. Two parties of us were

testing. W. J. Payne was the other. We two tested all the eight and six-inch pipe by applying 1,200 pounds water pressure. When a pipe bursts or has a hole and pressure is put on, it comes out like steam. We throw that out. Bad threads we mash down on one side, so they can be plainly seen and condemned.

*Cross-Examination.*

I tested every pipe separately. Some may have been two pieces coupled together. Used water pressure only. Have had no experience except in Delaware Iron Works, as described. Do not know what any of the pipes I tested were used for.

515 Defendant also offered in evidence the deposition of WILLIAM D. J. PAYNE, which is in substance as follows:

I am tester of pipes at Delaware Iron Works, which is the same as Morris, Tasker & Company. Same occupation in 1890. Pipes were brought to me. I filled them with water and put pressure on them 1,200 to 1,500 pounds, then examined them to see they did not leak and that sockets were tight. If they did not leak I rolled them out. If threads were good they were passed, if not the threads were knocked down and condemned. Did not know where the pipe was to go. Lewis G. Burke examined thread in the sockets. Bennett tested pipe with me. I heard afterwards the pipe were to go to Crane Company, Chicago, I put nothing over the pump but perfect pipe.

*Cross-Examination.*

Each joint was tested separately. Sometimes two short lengths coupled together. Used water pressure only. Have had no experience in testing pipe in line. Do not know what these pipe were used for. The good ones were put together by themselves and the bad sent back to the machine. My experience with tests has all been with hydraulic pressure.

517 Defendant also offered in evidence the deposition of WILLIAM D. GREER, which is in substance, as follows:

I am foreman of the cutting room of Delaware Iron Works, which is the same thing as Morris, Tasker & Company, occupation in 1890 was the same. I remember the Crane Company order. My duty was to see the pipes were properly cut, threaded, tested and loaded. I saw them all in a general way as foreman. After cutting they were tested as to thread and taper with steel gauges, then hauled to trough and tested with pressure of 1,200 to 1,500 pounds. If pipe was deficient it was chalked off and sent back to the machine for repairs. If thread was deficient they took a sledge and broke it down, so it could not be used again. None but good sockets were used. Each joint of pipe was put under 1,200 to 1,500 pounds hydraulic pressure. Tests were made in single lengths. If they showed up any default they were condemned. It is a valid and perfect test of the sufficiency of the joint. It is the test always used at mills. I have never seen any other. The thread was two inches long, eight threads to the inch, five-eighths inch to the foot. Taper thread was tested with gauge and socket, with same gauge so that both threads corresponded. Pipe that went for shipment was protected with a collar varying in width from an inch and a half to two inches. They are never quite as long as the thread. They are put on the end, so if the pipe dropped it could not be injured. No pipe was loaded without a protector. Pipe found defective was chalked off and thrown out. Some condemned altogether, others repaired. After repairing it is re-tested. Pipe is piled on car overlapping, so that threads of one pipe shall not chafe the thread of another. The line pipe is generally made for gas or oil. It is generally heavier than common merchant pipe, and more particular in threading and socketing. The customary test is hydraulic pressure.

*Cross-Examination.*

I was only superintendent of cutting, threading, testing and loading. Sockets were made in one place and pipe welded in another. Gave them all usual tests, as foreman, did not test every piece but superintended the test. Have had no experience in testing pipe in line. One length included in test. Sockets for this order were made according to pattern for Crane Company which I understood came from National Tube Works. It was heavier than collar made for ordinary eight-inch pipe, but not heavier than collar for our eight-inch line pipe. I am an employe of the company.



518 Defendant also offered in evidence the deposition of JONATHAN ROWLAND, which is in substance as follows:

I am vice-president of Morris, Tasker & Co., incorporated, and secretary of the Delaware Iron Co. Held same positions in 1890. Morris, Tasker & Co. received an order from Crane Company for twenty miles eight-inch standard line pipe, under written contract dated July 12, 1890. Also verbal order for five miles six-inch and five miles of four-inch standard line pipe. The pipe was manufactured at Newcastle, in strict compliance with the specifications of the contract. I was at the works from time to time and saw that it was made from good quality of iron, was of specified weight, was tested up to and beyond required test, pressure being 1,200 pounds. I saw that care was exercised in loading and shipping; thread protectors were placed in unsocketed ends of pipe and contract was completed prior to time stated in agreement. A sample socket was sent us from National Tube Works by order of Crane Company with instructions to use similar coupling. We found this socket not materially different from our ordinary line pipe socket, except the sample was slightly heavier. We increased the weight of ours to correspond with sample, and finished it on entire order of Crane Company, as to threads, length of taper, the sample was like that used by us. Have never seen any pipe tested at mills except by water pressure. It is considered by pipe manufacturers a valid and perfect test of tightness of joint. Threads on each end of pipe are cut by the same machine and same set of dies to insure accuracy. We have master or standard gauges, consisting of a tap and corresponding ring. All dies and taps used in cutting threads are compared with these master gauges. The proof that threads are uniform on both ends of pipe is that when you screw the coupling on one end and put pipe under pressure no leakage is discovered. Both threads are cut in same pipe by same machine, and must necessarily be uniform. The only method I know of testing pipe in line is water pressure. I remember being present at a test some six years ago of a line of National Transit Company in Western Pennsylvania, nine miles long. It was tested by water pressure.

*Cross-Examination.*

I did not assist personally at the manufacture of pipe but was present from time to time and saw it being made, tested and shipped. Did not personally apply any tests. Have had no experience in testing pipe in line except as above testified. Tests at mill were af

single joints. Sample collar sent us was not different from tho. adopted by us for line pipe except slightly heavier. I am an officer and stockholder of the company.

519 Defendant also offered in evidence the deposition of JOHN PERRON, which is in substance as follows:

I am a pipe inspector at McKeesport, Pa. In the summer of 1890 I was testing pipe for the National Tube Works. I inspected and tested an order of 8-inch line pipe manufactured there for Crane Company. It was tested with water pressure to 1,000 pounds. Anything that was defective was rejected and thrown out.

*Cross-Examination.*

Not more than two pieces in any one length were tested. Tests were made with water. Have had twelve years' experience testing pipe for National Tube Works. Have had no experience in laying pipe for natural gas. I personally tested all pipe. I am an employee of the company.

Defendant also offered in evidence the deposition of ARTHUR PAGE, which is in substance as follows:

I am a laborer at McKeesport. In the summer of 1890 I was weighing and inspecting 8-inch pipe at National Tube Works. I remember the Crane Co. order. My duties were to weigh pipe. I saw all the pipe tested and my duties were after it came from the pump to weigh and re-inspect it for shipment. I exercised special care in inspecting the pipe and was satisfied it was up to standard weight and weld, no sand holes or pin holes or defective parts whatever.

*Cross-Examination.*

I do not believe there was any more than one joint tested together. Tests were made with water. Have never worked on pipe line but have inspected pipe for other companies, viz.: U. S. Pipe Line Co. at Reading, and Continental Mills at Pittsburg and the National Tube Works. All tests were made with water. I personally made and inspected the pipe. I am an employe of the Company.

521 Defendant also offered in evidence the deposition of JOHN COTTLE, which is in substance as follows:

I am employed at Paige Tube Works, Warren, Ohio. Worked there during the summer of 1890. Had to help test Crane pipe and turn pressure on, also helped them load on day turn. We gave them all 1,000 pounds pressure, sometimes a little more. They stood the pressure first rate. If any broke we threw them out. If any defects were shown, pipe was sent back. None but perfect pipe passed through the test.

*Cross-Examination.*

Tests were of single length except in case of a few spliced pieces. Tests were made with water. Have had no experience except in this mill. I ran the pump. Saw about half the pipe tested. Am an employe of the company.

Defendant also offered in evidence the deposition of CHARLES A. MURRAY, which is in substance as follows:

In 1890 I was at Paige Tube Company. Had direct charge of manufacturing sockets or couplings. Iron was cut from bars then bent and welded, then tapped, then recessed or belled. After belling it was gauged on a piece of pipe cut to proper size, then sent to threading floor. Adjustment of taps to size is the most important point. We adjust those with liners of tin. We did all these things with this pipe and used great care and precaution. There was one man specially employed to gauge sockets and do nothing else. I superintended the sizing of taps myself, superintended the accuracy of all this. I only inspected couplings or saw that they were inspected. We used sample coupling sent from National Tube Works and followed it as near as possible except we made ours heavier. We ran to taper or center of socket while McKeesport only ran theirs in I think not more than an inch. Our socket had longer taper than theirs which was better for the coupling. Have been engaged in that business for sixteen years. Am familiar with pressure on pipe and sockets in line. Pressure would expand pipe before it would sockets. It would have no effect on sockets. I have witnessed tests at Reading, Pennsylvania. They were pulling or trying to pull pipe out of socket. Have witnessed hydraulic tests on testing machines that ran tester to 3,000 or 3,500 pounds, but no effect on sockets.

Never saw any tests of this pipe with one or two joints screwed together. Tests were made with water. Never had experience testing pipe in line. Took no part personally in making the tests. Saw about one-eighth of the pipe tested. Am an employe of the company.

Defendant also offered in evidence the deposition of AUGUSTUS J. WARD, which is in substance as follows:

In 1890 was shipping clerk for Paige Tube Company. Had charge of tallying, weighing and loading pipe. The eight-inch line pipe was consigned, some to Crane Company, I think, some to Columbus Construction Company. All the eight-inch pipe that was shipped passed under my supervision. Had nothing to do with testing. The condition so far as my supervision went was satisfactory and first class. Everything was done with the utmost care.

*Cross-Examination.*

Had nothing to do with testing. Did not assist in testing. Had no experience with pipe in line. Am an employe of the company.

Defendant also offered in evidence the deposition of JAMES HULL, which is in substance, as follows:

Am labor foreman for Paige Tube Company. Was so in 1890. Inspected and gauged thickness of iron for Crane order. Every piece of it was good in character and quality. Any defective material found was shipped back to the rolling mill.

*Cross-Examination.*

Know nothing about testing. Tests were made with water. Am an employe of the company.

523 Defendant also offered in evidence the deposition of WILLIAM B. WILLIAMS, which is in substance as follows:

Am assistant superintendent of Paige Tube Company. The same position in 1890. Had nothing to do with Crane order, but did with manufacture of it. Superintending, bending and welding on day turn. Gauged some iron occasionally. Kept general supervision over entire manufacture during day turn. It was number 1 pipe up to standard weight, looked well in all respects. Our coupling was two pounds heavier than sample coupling from McKeesport. We were very particular in every length of pipe and in testing and threading.

*Cross-Examination.*

Tests were made with one joint except a few spliced pieces. Tests were made with water. Have had experience in mill tests for fourteen years. Tests with hydraulic pump. Saw one quarter of pipe manufactured. Am a stockholder in the company.

Defendant also offered in evidence the deposition of WILLIAM H. CREHAN, which is in substance as follows:

Am night manager of Paige Tube Company and held same position in 1890. Had charge of Crane pipe on night turn. Saw it was all right. My position was to see no bad pipe went through. I saw the biggest part of the pipe that went through in all departments on night turn. I cautiously watched all details of manufacture. If anything wrong with iron, we would throw it out. This was about the best pipe I ever saw made in every particular referring to threading, coupling and other matters of manufacture. My means of information is that I personally took part in its manufacture, and was responsible for the perfection of the work.

*Cross-Examination.*

Only one joint included in test. Tests with water. Have had no experience with tests in line. Watched process of manufacture of this pipe with a little more attention than ordinary, because that was our instructions. Am a stockholder in the company.

525 Defendant also offered in evidence the deposition of ALBERT T. PAIGE, which is in substance as follows:

I am treasurer and manager of Paige Tube Company. Same positions in 1890. I remember we took a contract to furnish pipe to Crane Company. We used extra care in making it. Got extra men to look after it as inspectors.

Quality of pipe was first-class in every respect. We went beyond ordinary care both as to making and shipping. Mr. Bray and I met Mr. Hequembourg at Victoria Hotel, New York, and he gave us orders to wait until we got sample coupling from National Tube Works, and that we would follow that exactly in making ours, which we did as to weight. The way it was made, threading and in every way, in all respects we conformed to that sample.

*Cross-Examination.*

Only one joint in any one test except in case of occasional splice, tests made with water. Have had no experience testing pipe in line. Took no part personally in making and testing pipe, but saw it was done in accordance with instructions from Hequembourg. Am treasurer and general manager of the company.

526 Defendant also offered in evidence deposition of GEORGE L. CRAIG, which is in substance as follows:

Am general manager of the Crescent Pipe Line Company and the W. L. Mellon Pipe Lines. I laid line of pipe for Natural Gas Company at West Virginia, and others, a total of about 1,000 miles of pipe. On the Crescent Pipe Line Company we tested their line from Hayes Station, Allegheny County, to Hayes Grove, Cumberland County, Pennsylvania, with water. This was about 165 miles. Standing pressure was 1,000 pounds. We pumped the water with the pumps we were going to pump the oil with up to 1,000 pounds and allowed pressure to remain about an hour. It showed decrease of about sixty pounds. Our valves were not perfectly tight. There is always a little leakage at the valve. This pipe was nearly all five-inch, about nine miles of six-inch. It was eight-thread pipe made at National Tube Works and Spang, Chalfant and Pennsylvania Tube Works. It was inspected by Estrada, Kenyon five Gray and tested at mill to 1,000 pounds, each joint by itself. The

balance of the line was tested with oil. I consider water the more severe test. We used oil because we had not time to make it with water. I consider a test of single lengths at mill, hydraulic pressure, is thoroughly satisfactory. I am carrying 1,400 pounds on that line now with oil. As to the usual method of screwing pipe into line field. On Crescent line we had four pairs of tongs, three men to a pair, one stabber, one man at collar to hammer, two men swabbing pipe, two men at jackboards, one foreman and a water boy, also one or two extra men. Pipe was first swabbed inside and protector was taken off and threads oiled, pipe placed for stabber, then tongs were put on and pipe started by hand. After turning two or three threads they would throw tongs on. Stabber's place is to see that pipe enters collar properly and is not cross-threaded. There is no trouble for a man who understands his business to tell whether the threads are crossed. He receives twenty-five cents a day more than the other men. The last two or three threads go up rather hard and hammerer hammers collar to make it go easier. The foreman and stabber must be experienced men. It is a careful job. The result of careless or unskillful work is leakage at joint. It is necessary to see in laying pipe that it is lying perfectly level and weight distributed.

527 Defendant also offered in evidence deposition of GEORGE HEARD, which is in substance as follows:

I live in Pittsburg, have had charge of the business of the Natural Gas Company of West Virginia, as Manager. Have never laid any pipe personally, have seen it laid to a considerable extent. We put pipe together with tongs worked by hand. It takes very great care and skill to put pipe together properly. Must be put together so that threads will not tear, and must be set up just to the right point, then care must be taken that there are no strains at the joints. Skillful pipe-men can tell whether threads are tearing when pipe goes together. If pipe is started properly, it will go together easily. If started at an angle it will commence to go hard at the outset. If cross-threaded it commences to tear and grind at the beginning. This is shown mainly by the difficulty of starting. A joint ought to be coupled slowly and carefully. If tongs are put on and pipe screwed up without watching to see whether it was properly struck, threads will be torn. Careless work will result in bad pipe line, which is certain to leak at joints. In my opinion the majority of instances of leaky joints were due to faulty putting of lines together. If pipe is screwed up tight until all the threads are used up, collar



will become twisted that is it will butt in the collar, and if screwed too fast it will develop heat and expand joints. This may take place with a machine but I don't think men with tongs could screw fast enough for that. Pipe must be in hands of experienced men. Care must be taken that threads are not crossed and not screwed up beyond a certain point. Pipe and collar have corresponding taper. If screwed up too hard, it will wedge. Then it must be laid level, without straining at points. A joint will not stand the strain that the natural body of the pipe will. The best pipe can be butchered by bad, careless laying. In the majority of cases leakage I think is due to careless laying.

529 Defendant also offered in evidence deposition of F. C. SMINK, which is in substance as follows:

Am Treasurer and General Manager of Reading Iron Company. In summer of 1890, the company made a contract with Crane Company for 40 miles of 8-inch standard line pipe. About twenty-seven miles were completed and shipped. I had general management of the manufacture. The iron was made specially for pipe work and considered of the very highest grade for such purpose. The utmost care and most rigid inspection was given to every detail in course of manufacture. The finish of the pipe was considered fully up to highest standard of line pipe produced by this company. Socket and collar was such as this company adopted for use in line pipe after much experience and consultation with experts. Did not differ materially from standard of National Tube Works and others but was believed to be an improvement, being reamed to offer better facilities for caulking in case of leakage.

*Cross-Examination.*

Cannot say whether two or more lengths were tested at once. Only occasionally saw tests. Tests were made with water. Have had no experience of tests in line. Took no part in making any tests and only saw small portion tested. Am treasurer and general manager of the company. Sample collar was such as we only used in line pipe of this character.

- 530 Defendant also offers in evidence deposition of ISAAC LEVI BURGESS, which is in substance as follows:

In summer of 1890, was foreman of Reading Iron Company. I remember Crane Company's order. Had no particular duties about it aside from being consulted in regard to standard or the mode of reaming sockets, the number of threads for sockets. This part of the work was left to me. Did not have charge of mill but know about manufacture of line. Was consulted on all points regarding it. We endeavored to make it a first class line. It was to be a gas line and all the workmen connected with it were cautioned to be very particular in inspection. It was tested at 1,200 pounds. There was no possible way of deviating from the test. Special care was taken to protect threads with rings. Am familiar with method of testing pipe in line, from experience in oil fields of Pennsylvania. One line from Foxburg to Kane, six-inch line, was tested with water. Another 2-inch line from Chester to Tarport was tested with oil. Long line is usually tested in sections with water, if obtainable.

*Cross-Examination.*

Only one joint tested at a time except in case of spliced joints. Tests were made with water. Have had no experience in testing gas-pipe in line. Took no part in testing Crane Company's line but from time to time saw it done. Am an employe of the company. The collar used on Crane Company's line was the collar we used on all 8-inch line pipe only we were more particular to make it perfect in connection with this order as we knew it was for gas.

- 531 Defendant also offered in evidence deposition of GEORGE SCHUHMANN, which is, in substance, as follows:

Am superintendent of the Tube Works of Reading Iron Company. Have had no experience in testing pipe in line.

- 532 Defendant also offered in evidence deposition of ALEXANDER C. FEATHER, which is, in substance, as follows:

I am foreman of finishing department on night turn for Reading Iron Company. Same position in 1890. I remember Crane Company order. My duties were to see that it was properly threaded and tested. I saw practically all manufactured on night turn one-

half of the entire order. Know of no tests applied to sockets of pipe as to quality. As to capacity to stand pressure, we applied 1,200 pounds hydraulic. Same degree of pressure was applied to all pipe in this order. Tests were made in single and spliced lengths. It is a valid and perfect test of sufficiency of joint. We put 2 inches of thread, 8 threads to the inch, on each length of pipe. Thread on pipe and socket was tested with standard gauge kept for that purpose only. We put thread protector cut from defective sockets on thread end of each length of pipe. If we found leaky joint it was cut off and a new thread put on, then tested again. If any defects in pipe leaks or otherwise, defects was cut out, balance spliced together. If, on examination, pipe was found to be unfit for line pipe, it was rejected. I used more than ordinary care in finishing this order; was ordered by superintendent to do so, and considered pipe in first-class condition when it left my hands.

*Cross-Examination.*

No tests with more than two joints. They were made with water. Have had no experience in testing pipe in line. Took no part in making tests, but saw about 80 per cent. tested that was finished on night turn. Am an employe of the company. The collar used for Crane Company was the one generally used for 8-inch line pipe by the Reading Company.

533 Defendant also offered in evidence the deposition of HENRY HAYDEN, which is, in substance, as follows:

I am proving pipe at Reading Iron Company. Same occupation in 1890. I tested about one-half of the 8-inch pipe manufactured during that summer for Crane Company. Test was 1,200 pounds hydraulic. Defects were marked out. All perfect pipe was measured, marked and made ready for shipment.

*Cross-Examination.*

Tests were made in single and spliced lengths with water. Have had no experience in testing pipe in line for gas. I ran the lever and assisted in testing about one-half of the whole order of pipe. Was and still am an employe of the company. The collar seemed to me to be the collar generally used for 8-inch line pipe.

Defendant also offered in evidence deposition of JAMES M. KELLEY, De  
which is, in substance, as follows:

In 1890 was foreman for Reading Iron Company. I remember Crane order well. My duties was to look after everything connected with the making of that pipe. Did all this to best of my ability. Could say that I examined 90 out of every 100 that was made on the day turn. I found it to be first-class pipe; examined pipe as carefully as foremen in my position are accustomed to examine pipe. Material was all first-class quality.

*Cross-Examination.*

Was not employed in testing department. Tests I saw were with water. Have had no experience in testing pipe in line for gas. Took no part in tests, but saw considerable part tested. Am an employe of the Company.

534 Defendant also offered in evidence the deposition of FREDERICK De  
C. PRINTZ, which was, in substance, as follows: P

Am a clerk in the shipping department of the Reading Iron Company. was tally clerk in 1890. Loaded and tallied pipe shipped to Columbus Construction Company; saw that it was properly loaded; eleven cars came under my supervision, containing 605 pieces. Approved pipe was stenciled "Reading Iron Company," length marked on it, threads whitelead and iron rings screwed on thread, and weight of each piece marked thereon. Defective pipe was not stenciled, threads unprotected, no length mark, and defective spots marked with chalk. The condition of the pipe shipped, so far as I am aware, was first-class.

*Cross-Examination.*

Have had no experience in manufacture of pipe. Personally saw loaded 11 car-loads. None was shipped to Crane Company direct. Eleven car-loads were consigned from August 18 to August 23, 1890, to Columbus Construction Company, Vermont, Indiana. Was then employed as tally clerk, and still hold same position.

Defendant also offered in evidence deposition of EDWARD L. SNYDER, which is, in substance, as follows:

In 1890 was tally clerk in the shipping department of the Reading Iron Company. Remember the Crane order, and supervised loading it under instructions of shipper. My duties were to take tallies and see that pipe was properly loaded. I took tallies of 121 car-loads, containing 6,511 pieces. Approved pipe was stenciled, length marked, threads whitelead and iron rings screwed on unprotected end. No defective pipe reached me. Condition of pipe shipped was all first-class.

*Cross-Examination.*

Have had no experience in manufacture of pipe. Personally saw loaded 121 cars. None shipped direct to Crane Company. Between August 9 and September 29, 1890, 121 cars shipped, consigned to Columbus Company at various points specified, namely: Vermont, 38; Tolleston, 11; Wilders, 13; East Chicago, 15; Sedley, 19; Clark, 17; Winimac, 1; Logansport, 3; Verona, 4; all in Indiana. I then was and still am tally clerk in employ of company.

Davis. 535 CHARLES E. DAVIS, called as a witness by the defendant, testified as follows:

My place of business is in Chicago, and am the manager of the western business of the Pratt & Whitney Company. They are manufacturers of high-grade machinery and instruments of precision. The home house is located in Hartford, Connecticut, and has been established over thirty-five years. I have had an acquaintance with the house since 1879. I know what is known among pipe men as the Briggs' standard for eight-inch pipe, and have had an acquaintance with that standard since 1886. The taper in that standard has been since that time three-quarters of an inch to the foot.

H. P. BISHOP, recalled for defendant, testified as follows:

So far as I know there was never any written agreement between the Crane Company and Spang, Chalfant & Co. I remember a letter dated July 11, 1890, received by the Crane Company from Spang, Chalfant & Co. In that letter there is a reference to a contract. So far as I know a written contract was never signed.

Thereupon the defendant offered the letter referred to in evidence as follows:

536 " *Gco. L. Forman, Esq., Crane Company, Chicago, Ill.* Let

DEAR SIR: Your favor of the 8th at hand. We have ordered the iron for your pipe and will commence next week its manufacture. We have stricken out the seventh clause altogether, we cannot sign a contract of that kind, we will make your pipe equal to any made, you can, if you wish, place a man at our mills to see it tested, we cannot, however, submit to the test proposed in Section 7, under which there may be so many contingencies in the way of work of others, over which we have no control, that we do not feel safe in signing the contract with that clause or section inserted. We have asked the National people, as you have suggested, to send us a socket, which they said they would send on this day. We give you A 1 pipe. Please send the contract corrected, as we have stated.

Your friends, SPANG, CHALFANT & Co."

There was no written agreement executed by the National Tube Works to my knowledge. There was a form of agreement furnished to them for signature, in the form of Exhibit B, attached to the Crane-Columbus contract. I took it to Mr. Lamb of that company in Chicago. He said he could not sign it; it was a matter for their manager, who was in the east. I received a letter from Mr. Lamb in that connection, dated August 25, 1890, but so far as I know, there was no written contract ever signed in pursuance of that discussion.

Thereupon the defendant offered the letter referred to as follows:

" NATIONAL TUBE WORKS CO. Let

CHICAGO, Ill., Aug. 25, 1890.

*Mr. Bishop, Care Crane Company, City.*

DEAR SIR: I return herein the contracts as you say that Mr. Forman desires to see Mr. Converse in relation thereto, and it is as well, perhaps, for him to present to Mr. Converse for him to pass upon the same before they are signed. I notice one error on the 8" pipe; it was to be 75 miles instead of 60.

Yours very truly, CHAS. A. LAMB, L. M."

537 Mr. Lamb was local manager of the company. Before submitting the form of the contract to him, I had filled in sixty miles as the mileage of the pipe. I have completed a statement

of the account between the Columbus Company and the Crane Company for pipe delivered and material furnished. After allowing all credits, including some matters that had been in dispute, the balance is \$72,843.43. I have also made a statement in detail of the amount of commission payable to the Crane Company on the unfilled portion of the contract, according to the terms of the contract. The total of that which would have been payable to the Crane Company, had the balance of pipe been delivered, is \$18,776.63. This does not include interest. The interest on the amount due for pipe delivered and material, and so forth, from February 12, 1891, to July 1, 1891, at six per cent., and from July 1, 1891, (at which time the law of Illinois was changed reducing interest, except when otherwise stipulated, from six per cent. to five per cent.) to December 20, 1897, at five per cent., is \$25,988.89. Computing interest in a similar way on the commissions earned on the unfilled portion of the contract, and adding the claim of the Pittsburg Tube Company against the Crane Company, which has been paid by the latter company, at \$9,056.49, with interest from January 15, 1892, at five per cent., the total amount due the defendant as shown by that statement is \$137,283.41.

Whereupon the defendant rested its case.

JAMES SHEEHAN, witness called on behalf of the plaintiff in rebuttal, testified as follows:

I live at Bradford, Pennsylvania, and in the fall of 1890 was foreman of a gang of men laying pipe for the Columbus Construction Company. I commenced at Tolleston, Indiana. I know Peter Crowley. I do not remember whether he ever spoke to me on the subject of the drunkenness of the pipemen. I had charge of one gang of men unscrewing pipe. There were no men drunk while they were working on that line that I know of. I was not intoxicated during that time or any portion of the time that I was working on that line, and was not under the influence of liquor while doing work on that line. Crowley did not remonstrate with me for being drunk, and I did not say to him in reply that I was my own boss and could do as I was a mind to. I was not discharged from that work that I know of.



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*Cross-Examination.*

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I did not see the men drinking very often; saw a few of them after their work was over. Never saw any of my men intoxicated that I know of. There were gangs of men on that job.

Q. It was not your gang that got drunk? A. I don't know, sir. I take a drink often, but not when I have work on hand. I drank when I was down there, drank beer a couple of nights that I know of, that was all.

LLEWELLYN MORTON, witness called on behalf of the plaintiff in rebuttal, testified as follows:

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I live in Chicago. In the fall of 1890 was helping lay a pipe line for the Columbus Construction Company. Was engaged in receiving the pipe and seeing that it was taken off the car properly. I remember Peter Crowley. Was receiving pipe at Tolleston. Had no conversation with him there in which he said that I was spoiling the pipe unloading it in that manner. He did not tell me that I was spoiling the pipe in the way that I was unloading it, nor did I in reply say that my instructions were to unload it as quick as possible, nor did he reply thereto that I was doing it. When I was unloading the pipe there, there was no time that there was nobody at the bottom, at the end of the skids, except me to receive the pipe. I never stood there for that purpose.

*Cross-Examination.*

I have lived in Chicago since 1890. Do not think Crowley said anything to me about pipe at Tolleston, nor anything except he might have said, Good morning, casually. Do not remember any talk over there about the pipe business, or referring to it. Cannot recall a single sentence Crowley said, or a single idea he ever expressed to me. Had some conversation with Crowley at Tolleston. Think he told me down there that he came from some 539 place near Toledo. This was either at Tolleston or down in the swamp. Could not tell anything that he said at Tolleston, no more than passing the time of day. I saw very little of him, and don't know that I met him except in the morning and evening going to and returning from work. Have never been a witness in this case before. Worked at Tolleston three or four days.

F. P. LEONARD, a witness recalled on behalf of plaintiff in rebuttal, testified as follows:

I was in the employ of the Columbus Construction Company in 1891. Kept the pipe record of the company, which is supposed to tabulate the receipt of pipe from the different mills. I made the entries in that book upon the receipt of the invoices; that was the method the company took in keeping track of the pipe that was received. The different stations where it was received were named in the book, and the book now exhibited to me is the pipe book kept for the spring of 1891. On page 7 is the record of the receipt of pipe at Ainsworth in 1891, all of the pipe received by The Columbus Construction Company in 1891 at that station, and there is also given the name of the mill, the number of joints, the size, the number of feet and amount of the bill or invoice, with the date that it was billed to us. All these particulars in that entry are in my handwriting. The words "test-line" written in red ink at that place refer to what the pipe was used for. So far as I know I wrote them.

*Cross-Examination.*

I made these entries on page 7 on or about that date, soon after the bills were received in our office. The bills from the mills with book was kept in the office in the city of Chicago. There was no other pipe received at Ainsworth in 1891. I cannot tell from looking at the book how many carloads there were received at Ainsworth. I presume I made the entry a few days after the car came in; don't remember positively. If there was any pipe from Greentown or Vermont or other places along the line 540 that came into Ainsworth it would be recorded in that book.

The book shows what mills it came from, and this lot that I have testified to came from the National Tube Works Company; about one mile of pipe.

Entry offered as follows: "1891, March 3, Ainsworth. National Tube Works Company. Number of joints, 292; size, 8 inch; number of feet, 5,415; bill, \$4,792.72." In red ink, above the entry to the right of the name of the station, "Test Line."

EUGENE F. OSBORN, witness called on behalf of plaintiff in rebuttal, testified as follows:

I live in Hyde Park, Chicago. Am an engineer and expert, and have been in that business about thirty years. I studied in Providence, Rhode Island, under an engineer, then worked in connection with building a gas plant and steam apparatuses and extensions of them; then went with the Providence Steam and Gas Pipe Company; build the company's plant in Minneapolis in 1870 and the water work plant there. Made a large extension there. Was with another concern in St. Paul for a number of years, then went into business for myself, running a foundry, machine shop and pipe establishment up to about '89. Since then have built ice plants and refrigerator plants, and so forth, and done general engineering and expert work. I have been connected with the Crane Company and have also done some professional work for the Elevator Company. Have some knowledge of pipe; know what standard pipe is. I should prefer the heavy Hequembourg collar to the standard collar; think there would be greater probability of making a tight joint with a heavy coupling than with a thin one.

*Cross-Examination.*

I have had some litigation with the Crane Company, which continued about two years, and is over now.

541 LEVI FRAME, witness called on behalf of the plaintiff in rebuttal, testified as follows:

I worked with Elias and Dave Fleming in unloading pipe at Ainsworth in 1890. I drove over to Ainsworth from my farm and with my son rode over with Elias Phillips three mornings.

HENRY COYLE, witness called on behalf of plaintiff in rebuttal, testified, as follows:

I was at Ainsworth in 1891, for a month in the spring and boarded at Mr. Cottle's. There was a mile of eight-inch standard line pipe—National Tube pipe—shipped to Ainsworth in 1891. This pipe was lowered off the car with ropes and skids and lowered down with ropes so that if it had been glass it could not have broken a joint. This pipe was hauled down to Deep River and put

into the test line, that is, about three-quarters of a mile of it. The other fifty or fifty-five joints were shipped to Greentown. I was there and watched it being laid. George Riley, Tom Galvin and Quinn, of the National Tube Works Company, who has testified in this case were there.

Q. And was that pipe laid at that time with the collars which came on it, the standard line collars?

This question was objected to as immaterial by the defendant and the objection was sustained by the court, to which ruling of the court the plaintiff, by its counsel, then and there duly excepted. Whereupon the further question was propounded by Coulsen, for plaintiff:

"I will ask the witness, for the purpose of raising the question now, to state whether or not that line was tested under air pressure as laid, and as he has already testified to, and if so, state when?" to which question the defendant by its counsel then objected upon the ground that it was immaterial, which objection was sustained by the court, to which ruling by the court the plaintiff by its counsel then and there duly excepted.

Thereupon this further question was propounded by the counsel of the plaintiff: "I will ask you, Mr. Coyle, what was the result of these tests as to showing leakage, and to what extent?"—to which question the defendant, by its counsel, then objected and the objection was sustained by the court, to which ruling of the court the plaintiff by its counsel then and there duly excepted.

This pipe was ultimately laid in the line of the Columbus Construction Company with the heavier collars. There was no eight-inch standard line pipe received at Ainsworth in '91 except this so-called "test line" pipe to which I have referred. There were perhaps a few joints of pipe taken to Tolleston marsh, perhaps half a dozen that were not good and were sent away, but they were mostly for holes in the pipe. I saw most of the pipe that was taken to the thread mill in 1891. I never saw a joint that was cross-threaded. There were many where the thread was stripped off where the collar had been iron-calked, but almost every time it stripped the thread when it was taken off. This I attributed to the iron calking. I have seen collars, standard eight-inch collars, tapped crooked, where they would stab a joint in, and it would not roll where you wanted it, and you would have to hold it off to one side or the other, or raise it or lower it, and get it off a straight line to screw it up. A leak in a gas line will close itself up. At the test made in the Crane Company's shop no one walked along the pipe while it was under pressure and tapped it with a hammer or anything of

that kind. I would not want to calk a gas pipe line at the joint when it is under more than a hundred pounds pressure.

Thereupon, the plaintiff by its counsel, asked this question: "How is that danger affected by the weight of iron in a coupling"?

(To which question defendant by its counsel objected, and the objection was sustained by the court; to which ruling of the court the plaintiff by its counsel then and there duly excepted.)

OSCAR FRAME, a witness called on behalf of the plaintiff in rebuttal, testified as follows:

543 "I am a son of Levi Frame, and live at Valparaiso; Indiana.

I worked for the Columbus Construction Company in the fall of 1890, unloading pipe and hauling pipe at Sedley. I know my father was working at unloading pipe at Ainsworth that fall, because I took him to work and went after him, and I saw him ride to work, also, with Elias Phillips.

#### *Cross-Examination.*

The day my father rode with Elias I was at work at home; do not know just what I was doing. My father rode with him two or three days. I saw him get on the wagon and go with him, but I do not just remember what I was doing during the day. It was not an uncommon thing for my father to get on a wagon and ride with somebody else. He always rode in preference to walking. I never thought anything about his riding with Elias until this came up in the last few days; to-day I commenced to think about it in Mr. Custer's office, this forenoon—this morning. He asked me if I remembered it, and I told him I did. My father was there. That is all he asked me. He asked me about hauling my father. When he asked me I recalled it. Cannot remember anyone else that my father rode with that year besides Elias and myself. Do not remember with whom he rode in 1889. In 1891, I could not tell you. Nobody had any talk with me about father riding with Elias until Mr. Custer talked with me about it. Father and I left Valparaiso last evening for Chicago to testify in this suit. I know Elias Phillips. I hauled my father over there one morning, I think either the second or third morning he was there. Did not hear him say he was over there trying to get a job, and that they would not give him a job. Did not hear him talk with anybody the morning I was

over there. Drove up there where the men wore unloading pipe, and I stayed and talked with the fellows a few minutes, and then I went back home. I was twenty-three the nineteenth of last February. I have worked this year on the Grand Trunk Railroad 544 in a wrecking crew.

BREWER BUTTON, a witness recalled on behalf of the plaintiff, testified in rebuttal as follows:

I remember talking to Thomas S. Casbon about coming up here to testify. In that conversation I did not ask him if money would hire him to swear to anything that was not true, and he did not say, "No, not for the whole gas line." I know Charles Casbon. I never gave him orders after a certain time that he should always unload his pipe on one side of the wagon only. I know Elias T. Phillips, and never gave him such orders. I know Charles Olds, and never told him to go down to the Chester ravine and roll pipe down the hill. As to paying Thomas Casbon money, I said to him that there was a law suit here and asked him to come up as a witness, and he said he would if there was anything in it. I told him his expenses would be paid, and he would be paid for his time, and he said the other side paid ten dollars a day; and I told him that I had no orders to pay ten dollars a day, that all the orders I had was that they would be paid for their time and their expenses would be paid, and if he came, I would see that he went away satisfied, but I could not give him ten dollars a day and I did not think the company would pay ten dollars a day for witnesses.

*Cross-Examination.*

I did not know how much the company would pay. I had previous experience in one trial, and do not know what the company paid anybody except myself. I supposed a reasonable amount would satisfy him; did not discuss that. I know what was paid to the other witnesses—two dollars per day. I did not make any bargain with them, only to agree to pay them for their time and their expenses, their railroad fare and their hotel bills. Their hotel bill was \$2 per day; their railroad expenses varied. I do not know that I told all of the talk between myself and Casbon. I had a longer talk with him than I described. A man by the name of Will Smith was present. I have talked with him as to 545 what occurred between myself and Casbon week before last down at his house, before his return here. Have not told all

that I said to Casbon; do not know as I can remember all that was said to him. Told him I had nothing to do with 1891; I could not adjust any differences between him and the company in 1891. He claimed to have a grievance against the company—about five dollars back pay. Am not sure that I have now told everything that I said, but do not remember anything more. He said that he was docked \$5 in 1891; that the timekeeper sent in his time short and he didn't get it. That is the first thing he wanted to talk about after I told him about the suit. Have now told all that occurred between us; all the substance of it. I never wrote to him. I remember Elias Phillips. The first order I ever remember giving him personally was the last one. I used to see him nearly every day and talk to him. Do not remember any long talks with him directing him what to do; only remember one order I gave him over on the Betts farm; think on the 24th of September. Know Charles Olds. Gave instructions to him. Dave Fleming is the man I sent up to put that pipe down the hill. I think Charles Olds was one of the men with him, and that Blohm was another. His brother, Lyde Fleming, was also one of them. I was in the yard at Ainsworth, and I sent people there. Cannot tell any orders that I ever gave Olds before the pipe rolling down the hill.

*Re-direct Examination.*

I do not mean to say that the pipe was rolled down the hill. I now remember that Casbon said something further to me; he said that he never saw but one joint of pipe injured while he was at work there in 1890.

*Re-cross Examination.*

My memory was refreshed by the memory of the counsel. Smith has been up here more than once. I came up with him the first time. I talked last week with counsel as to what occurred between Casbon and Smith and me. This matter was brought up between us as Casbon's statement then, that he never saw but one joint injured. I didn't remember it here to-day. I told it to counsel. I told all that I now remember.



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Smith.

JOHN C. SMITH, a witness called on behalf of the plaintiff in rebuttal, testified as follows:

I live at Louisville, Kentucky, and am a machinist. In 1890 I was screwing pipe upon the pipe line between here and Winamac, Indiana. I was employed by the Columbus Construction Company near Deep River. Was running the pipe-screwing machine on which Jackson Raymond was also working. I had experience in running the machine on three other jobs before that. Have seen cross-threading in my experience. There was but very little cross-threading while I was screwing on that engine; there was some, but very little. When it occurred we took it out. There were very few lengths of pipe discarded on account of cross-threading there; maybe it might reach five. I didn't screw up and leave in the line any cross-threaded pipe. There is a way to tell whether pipe is screwed up cross-threaded simply by looking at it in the line, if it is so bad that the thread shows on one side of the pipe. There is no other way to tell to a certainty that it has been screwed up cross-threaded simply by looking at it in the line. I have seen pipe lying in line where one pipe did not seem to be screwed straight into the collar. A collar that was not tapped right will produce this. I have known of collars not being tapped straight.

*Cross-Examination.*

Came up from Kentucky here in answer to a telegram. Am in the machine business and elevator work. Worked for the Columbus Construction Company from July until some time in November, 1890. Did not take any of the pipe up then. Never saw more than a few joints taken up at a time in a line. I spoke a few words to Mr. Button since I came here about this line, and with Mr. Custer. They did not ask all the questions that were asked here. They have taken up some new subjects here about a bad collar. A collar that is not tapped straight makes a bad looking 547 job. It is just as tight and I think just as good every way. I have seen a number of them, have been accustomed all through my career to see them. They were never rejected. Collars are tapped from both sides. This was the first time I ever ran that machine. Stanford was the inventor of it. Have seen cross-threading with my machine; could tell that it was being cross-threaded by the way the machine worked. It worked hard. We never got stuck; we never allowed them to run it up that tight. I would consider that an improper operation. You could spoil the

pipe by screwing it too far if it is straight threaded, if you would put on power enough. I could not do it with the machine; it was an eight horse power engine. I think there was a twelve horse power engine somewhere. I only saw one other machine at Deep River, and that was an eight horse power engine. If the engine got stuck in this operation, if the pipes come up straight, it would hurt nothing. Sometimes it would happen after we started the machine, the jack would slip. That would cause cross-threading; then we would stop the machine. I may have seen 50 to 100 collars on this line that were not tapped straight. My recollection is that I have seen a collar so crooked that it would throw the pipe at such an angle that the farthest end would be a foot away from a straight line. Could not say how many I saw that were as crooked as that. When you screw pipe into a collar you screw it up good and tight, get the oil and everything away from it. It dried it up, it drags the iron all in one direction, and when you reverse it it has a tendency to roll the iron the other way, and often it will lock the thread and injure the thread in backing it off. I do not see any indications of this on the pipe and collars that I now examine and that have been screwed and unscrewed. Sometimes the collar would get pretty hot in screwing it up, down at Deep River, and you could feel a little warmth. It was not hot, but just warm, a trifle warm.

Thereupon the plaintiff offered a certificate of Professor Garriott, of the Weather Bureau, giving the temperature on the days of the shop tests made in the Crane Company's shops in respect to the Kaufmann collars, showing that on Dec. 14th, 1897, 548 the temperature at 4 P. M. was 38 degrees above zero; at 5 P. M. 38 degrees above, and at 6 P. M. 37 degrees above, and that on the next day at 8 A. M. it was 31 degrees above; at 9 A. M., 31 degrees above; at 10 A. M. 32 degrees above; at 11 A. M. 33 degrees above, at the Weather Bureau in Chicago, which certificates was admitted by consent in lieu of the testimony of the officer in charge of the Weather Bureau.

ELIAS T. FLEMING, a witness recalled on behalf of the plaintiff, testified as follows:

I worked a few days in the fall of 1890 at what is called Chester's ravine. It is a ravine, runs from the east and makes a turn where pipe runs across over in an elbow like on the side of the hill. Right below it there is a springy marsh, boggy and very soft, and extends for ten or twelve rods to the west. It would not be pos-

sible for a horse to go from the bottom of the ravine out, either now or in 1890. I saw the place yesterday. If two skids were put down in that ravine one skid would be higher up than the other, so it would not be possible to roll down 18, 25 or 30-foot pipe. I should think, at the foot of the hill one of the skids would have to be blocked up at the least calculation eight feet. We carried the pipe that I helped to put in across the morass with tongs. My brother helped me, but I cannot remember who else. We rolled the pipe off where they were loaded and carried them down the hill with tongs, and slid them down the best we could; had tongs fastened hold of the pipe; there was a handle on each side. After we got them down the hill we carried them very handily; used a wooden plug in one end before we took the pipe down. We strung them out across that little marsh there eight or ten rods. There was a large stump in this ravine on the side of the hill; I should say it was two and a half feet through, and I should say three feet high. I saw that stump yesterday. There were some small ones; they were pretty well decayed though. They run from six to twelve inches, and are from four to eight inches through.

No one asked me to go there yesterday. I live near there, about 9 miles. I made a suggestion to Mr. Custer that I would like to go there before I got on the stand. He told me to go, but I made the suggestion to go. There is only one place that I saw down there that the pipe had to be let down because the lay of the ground was such that wagons could not drive over it. I went out at Button's order to put that pipe down the hill; went across the field on foot. My brother walked over with me and some others, but I could not say who. Think there were five or six of us went from Ainsworth. There was quite a pile of pipe when we got there. Button was not there. It was covered with snow yesterday. Ground was not frozen in the marsh down there so it would hold a man up. The pipe, I presume, was buried in that quicksand. This boggy place, which would not bear a horse, I should say was 9, 10 or 12 rods long and about three rods wide. Elias Phillips was down there with me yesterday. Probably six or eight would take hold of a joint of pipe and get it down the hill with tongs, pretty steep walking. I don't remember that we fell down. Took each joint down piece by piece. We sank into the marsh some in carrying it across. Saw no horse there while I was there. Do not think I was there while all of it was put down that bank; don't know who put it down while I was not there. Have no idea at all how many days they were putting the pipe

down there. Cannot see very far from the hill on account of the timber. I should judge this ravine was about three-quarters of a mile northwest of Chester's house. Tel  
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Before resting its case in chief the plaintiff, having failed upon proper notice to secure the documents hereinafter mentioned, caused a subpoena *duces tecum* to issue directed to the president of the defendant company commanding him to produce, to be used in evidence on the part of the plaintiff, among other documents, all of the letters hereinafter in this bill of exceptions set fourth; and the defendant disputing the right of the plaintiff to compel said president to produce said documents 550 the matter was submitted to the decision of the court, and the court decided that the letters hereinafter set forth in this bill of exceptions were admissible, and the same were accordingly offered by the respective parties as hereinafter indicated.

Thereupon the plaintiff offered and read in evidence copy of letter of October 3, 1890, to the Pittsburgh Tube Company, signed by George L. Foreman, secretary, which is as follows: Let  
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OCTOBER, 3, 1890.

*The Pittsburgh Tube Co., Pittsburgh, Pa.*

GENTLEMEN: We are in receipt of the following letter from the Columbus Construction Company, to wit:

"We desire to call your attention to the 5½ casing shipped by the Pittsburgh Tube Company to our wells at Greentown.

"We have tried to use it in the well we are now building, and have been obliged to abandon for the reason given by our driller, as follows: 'I have just returned from a three days' racket with the casing at No. 19. We pulled two times and found one joint with a hole in it, and several that leaked under the collar. To my mind it is impossible to make the casing tight.'"

The company further goes on and asks us what disposition shall be made of the casing in question.

We should like to mention, incidentally, that this casing merely had a natural well pressure on it. That, as you are aware, is in no wise excessive. The casing made by any mill should certainly come up to the requirements.

If you doubt the Construction Company's complaint in this matter you are at liberty to send a man down to look at the casing; otherwise you will kindly advise us as to what disposition to make of it.

Yours respectfully,

GEO. L. FOREMAN,

*Secretary.*

(Dictated.)

red in 551 Thereupon the plaintiff offered and read in evidence copy of letter of October 10, 1890, Crane Company, to Pittsburgh Tube Company, as follows:

OCTOBER 10, 1890.

*The Pittsburgh Tube Co., Pittsburgh, Pa.*

GENTLEMEN: We have your favor of the 9th inst., stating that you will commence to ship eight-inch line pipe to Columbus Construction Co. to-day (the 10th), and that you have unfilled specifications for 7,000 feet.

Upon receipt of your letter we at once wired you as follows:

"Our *principals* out of the city and will not return until Monday. Will then give you shipping directions for a quantity. In the meantime do not ship any of the line pipe."

Confirming said message, we remain,

Yours respectfully,

CRANE COMPANY.

GEO. L. FOREMAN,  
Secy."

The plaintiff then offered and read in evidence copy of letter of October 15, 1890, Crane Company, to Pittsburgh Tube Company, as follows:

OCTOBER 15, 1890.

*The Pittsburgh Tube Co., Pittsburgh, Pa.*

GENTLEMEN: You have advised us that two cars of the eight-inch line pipe were shipped to Bennett's Switch on the 10th inst., but as we have not yet received invoices or bills of lading for same, we have thought possibly you succeeded in holding the pipe there.

If it was shipped, please send us invoices and bills of lading 552 immediately.

Respectfully yours,

CRANE COMPANY,

BISHOP.

Thereupon the plaintiff offered and read in evidence copy of letter of October 18, 1890, Crane Company, to Pittsburgh Tube Company, as follows:

Oct. 18, 1890.

*The Pittsburgh Tube Co., Pittsburgh Pa.*

GENTLEMEN: We are in receipt of your favor of the 16th inst., informing us that the two cars of 8 in. line pipe which you wired us on the 11th, had been shipped the previous day to the Columbus Construction Co., at Bennett's Switch, Indiana, are be-

ing held at Pittsburgh, at a cost of \$2.00 per day demurrage, subject to our orders. We must *that* that your letter surprises us, as although we did wire you on the 10th requesting that further shipments of this line pipe be deferred for a time, we certainly did not ask you to hold the two cars in question, as we knew nothing about their having been shipped until we received your telegram of the 11th above referred to, which of course gave us to understand that they were already on the way.

Inasmuch as these two cars were started (as we supposed) we did not intend stopping them, thinking that this comparatively small quantity could be taken care of in some way.

Your letter of the 16th is the first intimation we have had that they were not shipped, and we shall not expect to pay any charges such as you mention in same.

Concerning this line pipe matter in general would say, as already written you, that we are endeavoring to get same straightened out as early as possible. We will see our principals again as soon as they return to the city—probably on Monday. In the mean time, would like to have your reply to our letter of 15th, 553 which you said in your message of the 16th, you would send.

Respectfully yours,

CRANE COMPANY,

GEO. L. FOREMAN, *Sec'y.*

Bishop.

Thereupon the plaintiff offered and read in evidence, copy of letter from Crane Company to Pittsburgh Tube Company of December 4, 1890, as follows:

Dec. 4, 1890.

*The Pittsburgh Tube Co., Pittsburgh, Pa.*

GENTLEMEN: Replying to your letter addressed to Mr. Foreman, we would just state that we have been unable as yet to see Mr. Yerkes. We expect, however, that he will return to the city very soon, when we will advise you as to any arrangement that we succeed in making with him.

Respectfully yours,

CRANE COMPANY.

By J. B. MURPHY.

The plaintiff then offered copy of a letter from the Crane Company to the Pittsburgh Tube Company, dated Jan. 6, 1891, and read the same to the jury, as follows:

JAN. 6, 1891.

*The Pittsburgh Tube Company, Pittsburg, Pa.*

GENTLEMEN: In relation to Pipe Line matters, the Columbus Construction Company, by their vice-president, Mr. Charles T. Yerkes, write to us as follows:

"*First.* You can remove to your works the pipe which has  
554 been condemned on account of bad threads and fittings, the same to be repaired and returned to us and placed in the same location as it now lies. The pipe, on receipt, to be subject to further inspection and approval. As the pipe is received back by us, on the statements of our inspectors, the same to be paid for by us.

*Second.* The mills to commence delivering pipe to fill the balance of their contracts on the first of February, proximo.

*Third.* We to pay fifty per cent. for pipe which passes inspection on the ground, and the balance—fifty per cent.—immediately after the pipe has been tested in the line, at a pressure of not more than one thousand pounds to the square inch. Said tests to be made at as early a time as practicable.

This proposition to be taken in all its parts as being combined and not severally."

Upon its being represented to Mr. Yerkes that it was improbable that the manufacturers would consent to have the final payment in such indefinite form, he intimated, verbally, that he would be willing to fix a limit that should not be exceeded for the last payment, and to pay six per cent. interest until paid, upon the deferred payment.

We submit this for your consideration, acting in the capacity of brokers for the Columbus Construction Company, and will not assume any responsibility for the settlements. We do not say this because we know anything derogatory to the credit of the Columbus Construction Company, but simply because the small compensation that we receive is insufficient to permit us to assume any responsibility beyond arranging matters of shipment and inspection.

As you are aware, it was originally contemplated that all of this matter would be finished up last fall, and with that expectation we undertook our part for a very small brokerage, which, as it since transpires, was too small to properly compensate for the work involved.

Had the mills completed their work as promised, our work would have been finished; but as they were unable to do their share, and as it was through their failure that the present situation was reached, we feel that we are doing all that can be ex-  
555 pected of us in endeavoring to arrange the best terms possible for the mills, and that we could not fairly be asked to double or treble our work and assume additional responsibility.



We trust that you will be able to give this matter your early and favorable consideration, and to see your way clear to arrange so that it may be wound up.

Awaiting your advices, we are

Yours very truly,

CRANE COMPANY.

R. T. CRANE, *President.*

The plaintiff then offered and read to the jury copy of letter dated October 2, 1890, from George L. Forman, secretary, to F. C. Smink, treasurer and manager of the Reading Iron Company.

OCTOBER 2, 1890.

*Mr. F. C. Smink, Treasurer and General Manager Reading Iron Company, Reading, Pa.*

DEAR SIR: As you are aware, we have nearly every mill in the country working on this pipe line. When the writer desired shipments withheld until the 10th day of October, he dictated one letter, copies of which were sent to all the mills. The number of mills that were behind was so large that they predominated in the writer's mind at that time. In fact, your company was the only one that pretended in any way to observe the time limit in the contract, or keep the promises of daily shipment.

In the error you got a copy of the general letter sent out to all those mills. Although a little late, permit us now to withdraw the section of the letter charging you with nonfulfillment of promises, etc., etc. Had the writer stopped to think for a moment, a separate letter would have been directed to you.

Trusting this explanation will be satisfactory to you, we remain.

Respectfully yours.

GEO. L. FORMAN, *Secretary.*

Better come down to Pittsburgh on the 7th for a change of air.

The plaintiff then offered copy of letter to the Reading Iron Company, signed by Forman, secretary, dated October 15, 1890, and read the same to the jury as follows:

OCTOBER 15, 1890.

*Reading Iron Co., Reading, Pa.*

GENTLEMEN: As you will note, we refrain from sending you further shipping directions on the Line Pipe. On account of delinquencies and delays on the part of a majority of the mills in delivering the pipe, the Construction Company are thrown over into

ed in spring, and it would be a serious thing for the mills on contracts still uncompleted to continue shipments and leave the pipe out in the weather for some months, under the terms of the guarantee.

Mr. Smink will either receive a letter in full from us on the matter shortly, or I will see him in person and arrange for future shipments.

GEO. L. FORMAN, *Secretary.*

(Dictated.)

The plaintiff then offered copy of a letter, dated October 25, 1890, from Forman to Smink, and read the same to the jury, as follows:

OCTOBER 25, 1890.

*F. C. Smink, c/o Reading Iron Co., Reading, Pa.*

The line will be completed in the spring. Deliveries will not be required until during the winter however; in other words, you can complete the order when business slackens up. Expect to 557 call on you next week concerning same.

GEO. L. FORMAN.

The defendant contended that communications from the mills to the defendant or its officers or agents during the same period of time, being a part of the correspondence between the mills and the defendant, and having been included in the notice to produce, served upon the defendant's counsel, and the subpoena *duces* served upon Mr. Crane, were admissible on behalf of the defendant, if the defendant's letters to the mills were admitted on behalf of the plaintiff. Accordingly, defendant, by its counsel, offered in evidence a telegram dated Reading, Pennsylvania, October 25, 1890, addressed to the Crane Company, which is as follows:

"Will you be likely to resume shipping instructions for eight-inch line? If so, when, and in what quantities? Answer to-day as I have other negotiations in progress."

Signed F. C. SMINK.

Thereupon the plaintiff offered and read in evidence copy of a letter dated October 25, 1890, from Forman to Smink, which is as follows:

OCTOBER 25, 1890.

*Mr. F. C. Smink, Treasurer and General Manager, Reading Iron Company, Reading, Pa.*

DEAR SIR: The writer is in receipt of your telegram, of even date, reading as follows:

"Will you be likely to resume shipping instructions for eight-

inch line? If so, when and in what quantities? Answer to-day, as I have other negotiations in progress."

To the above, immediate reply was made by wire, as follows:

"The line will be completed in the spring. Deliveries will not be required until during the winter, however; in other words, you can complete the order when business slackens up. Expect to call on you next week concerning same."

558 Confirming said message, I remain,

Yours very truly,

GEO. L. FORMAN,

*Secretary.*

H. P. B.

The plaintiff then offered and read in evidence copy of a telegram from Forman to Smink, dated November 15, 1890, as follows:

Nov. 15, 1890.

*F. C. Smink, c/o Reading Iron Co., Reading, Pa.*

Pipe referred to is lot shipped by water and damaged in transit. No question as to pipe sent by rail, and received in proper condition. In requesting you to send representative our people merely wished you to see condition for yourself.

GEO. L. FORMAN.

Thereupon the defendant offered a telegram, dated Nov. 14, 1890, from Smink to Forman, which is as follows:

"Do you think it necessary in order to protect our interest to send man to witness inspection of pipe, as requested by your people? Pipe was thoroughly tested before shipping, and I apprehend no trouble unless there should be prejudice against us."

Thereupon the defendant offered also a telegram, dated Reading, November 17th, from Smink to Forman, which is as follows:

"I have instructed our Mr. Clifford to examine Reading line, and call on you regarding same."

The plaintiff then offered in evidence copy of a letter dated November 29, 1890, from the Crane Company to F. C. Smink, and read the same in evidence, as follows:

Nov. 29, 1890.

*Mr. F. C. Smink, Gen. Mgr., Reading Iron Co., Reading, Pa.*

DEAR SIR: We wired you to-day, asking you whether you

preferred to have the defective line pipe returned, or would arrange matters so that the pipe could be rethreaded on the ground.

559 We think that by having a pipe machine shipped you could get power from some of the mills along the line and recut the defective threads, in that way saving considerable expense over what you would necessarily be put to should you have the pipe returned to Reading.

Since telegraphing you we have your message asking at what point the defective pipe is located, to which we immediately wired reply that a portion of it was scattered within twenty-five miles of Chicago; also about fifteen cars at or near Greentown, Indiana.

We also stated in the message that about half of the pipe you shipped had proved defective.

A great portion of this pipe was shipped with imperfect threads, the same having been flattened at the ends, in consequence of which, not being round, your machine did not, of course, cut a sharp thread.

On the other hand, a great quantity was damaged in transportation, the threads being badly mashed; in fact, in such condition that the pipe cannot be used at all without recutting.

The inspection will no doubt be completed next week.

Please advise us just what disposition you wish made of the pipe.

Respectfully yours,

CRANE COMPANY,  
J. B. MURPHY.

The plaintiff then offered in evidence copy of a letter from the Crane Company to Smink, dated December 29, 1890, and read the same to the jury, as follows:

December 29, 1890.

*Mr. F. C. Smink, Treasurer and General Manager Reading Iron Company, Reading, Pa.*

DEAR SIR: Your telegram of even date to our treasurer is received, the same reading as follows:

"Can't you send me a remittance by 31st to help me out on January 1st payment?"

560 We are very sorry to say in reply that we cannot do anything for you just yet. As the reports come in from the inspector on the line pipe, the matter looks worse and worse; and as we confer with the Columbus Construction Company, we find that the friction with them and the dissatisfaction on their part is largely due to the Reading pipe, it being in fact, the principal cause of their holding back a large amount.

We are hoping to get the matter in shape in a few days so that we shall be enabled to take hold of the pipe and put it in order. We probably shall be able to make some more complete report to you within a week, but until matters get into a more satisfactory shape, we shall feel as though you ought not to ask us for more money.

Respectfully yours,

CRANE COMPANY,  
A. M. GILBERT.

The plaintiff then offered in evidence copy of a letter from the Crane Company to the Reading Iron Company, dated December 30, 1890, and read the same to the jury, as follows:

DECEMBER 30, 1890.

*Reading Iron Company, Reading, Pa.*

GENTLEMEN: The inspectors of the line pipe have now made their report, and advise that they have condemned 2,566 pieces of your pipe for the following causes:

Scant threads .....	1 405 pieces
Jammed threads.....	825 "
Defective couplings.....	102 "
Split pipe.....	6 "
Nicked threads.....	140 "
Oval pipe.....	34 "
Short couplings (Not line pipe).....	54 "

Regarding these last mentioned fifty-four pieces, we cannot see that anything can be done except to ship the same back to you, as they cannot be used.

It now seems probable that the best course to pursue in regard to this condemned pipe is to have it loaded onto cars, brought in to our shop and put in condition. This will involve a great deal of work, as we find that there is but a comparatively small amount of the pipe at any one station, not enough, probably, to make it an object to send out and set up a machine and so do the work on the ground.

It is our understanding that you desire us to undertake this work for your account. If you wish to give any different instructions, please let us hear from you by wire upon receipt of this.

We are very much surprised to notice, from the reports from our inspectors, the large amount of scant threads.

Yours truly,

CRANE COMPANY,  
A. M. GILBERT.

Thereupon the defendant offered letter dated January 2, 1891, from Smink to Crane Company, which is as follows:

JANUARY 2d, 1891.

*Crane Company, Chicago, Ills.*

GENTLEMEN: Your letter of the 30th ultimo, containing a report of the inspection and condemnation of certain line pipe, is a very great surprise to me, and inasmuch as it differs so materially from the impressions I had gained on my recent visit to Chicago, I am at a loss exactly to comprehend the situation. The report states that 1,405 pieces were condemned owing to scant threads. This is a most astounding revelation, particularly as all our line pipe is threaded with 17 or 18 threads, which at 8 threads per inch, would make at least  $2\frac{1}{8}$  inches of thread on each end of pipe. In addition to this the couplings are the standard line pipe couplings made to suit. Immediately after the suspension of your order we applied some 11 miles on account of another line pipe order we had, which was inspected by an expert of long experience in this business, 562 and acknowledged to be one of the best, and pronounced by him to be the finest lot of pipe he ever inspected, and particularly so as to threads and couplings. We have this statement on record.

As to the condemnation of the other pieces for the various causes therein named, I can only attribute it to the grossest carelessness on the part of the transportation people; and yet since this trouble has occurred we have made inquiry from every one of our customers, of whom there are very many, who received pipe over the same routes on which your pipe was sent, and have from them a universal report that everything reached them in good condition. My mind, therefore, is, as I intimated before, greatly disturbed as to whether there may not be either an error in the report, or whether perhaps the inspection was not a hypercritical one and prejudiced by certain interests. I would not, however, for a moment have you believe that we had the slightest suspicion that you did not intend to do us full and ample justice in the matter, but it may be there are some causes operating against us of which you are ignorant.

In order to gain more definite information regarding the alleged causes of complaint, I have, therefore, decided that it will, perhaps, be a wise measure on our part to send the superintendent of our finishing department to you, with the request that you will extend to him such facilities as may be necessary in making a thorough examination into the alleged defects. In accordance with my in-

structions, he will, therefore, present himself to you on Monday morning next.

Anticipating your kindness in the matter, I am

Very truly yours,

F. C. SMINK,

*Treas. & Gen. Mangr."*

Thereupon the plaintiff offered in evidence copy of letter to the Reading Iron Company, dated January 6, 1891, from the Crane Company, and read the same to the jury. This letter was, 563 except the address, in all respects identical to the letter of the same date, to the Pittsburg Tube Company, already set forth, and hence is not here repeated.

Thereupon the defendant offered in evidence letter dated January 19, 1891, from Smink to Crane Company, which is as follows:

READING, Pa., January 19, 1891.

*Crane Company, Chicago, Illinois.*

GENTLEMEN: In reply to your letter of the 30th ult., submitting a report of a number of pieces of the eight-inch line pipe shipped on account of your contract of July 24, 1890, condemned by the inspectors for certain given reasons; and your letter of the 6th inst., submitting a proposition for the adjustment of the present difficulties and for a modified contract for the balance due on the original agreement, we would say: that since we have received the report of our Mr. Burgess, a practical expert in line pipe matters, who visited you recently to investigate the complaints, we are convinced that the inspection was a hypercritical one and that there exists no valid ground of complaint, except in the item of 825 pieces of jammed threads, which was caused by the injuries received in transit, and the costs of repairs which we are quite willing to bear.

"As to scant threads, we understand because the thread does not show a perfect A up to its full length, but is a scant and vanishing thread at the back, the pipe has been condemned. This is one of our strong points of its value as line pipe, and we have never made a line of pipe in all our experience of many years, both in the old company as well as this one, that was not made in exactly the same way. It is at the back of the thread, where the greatest strain is put upon the pipe, and the vanishing thread affords the maximum of metal to resist it, and for this reason we have not the slightest fear that a perfect joint cannot be made, and should there be a leak we are quite positive it will not be from this cause. To attempt 564 to make these threads to what seems to be desired by the inspector of the Gas Company would, in our opinion, be unwise,



as it would tend rather to impair than to improve the joint. Mr. Burgess also reports that all the rejected couplings would certainly make a tight joint, and furthermore, that there was positively no split pipe in the lot, and that the nicked threads consisted of such slight imperfections as were always incident to the manufacture of all pipe, and would in no way affect the security of the joint made up with them. The oval pipe is perfectly round on the outside, and but slightly irregular on the inside, due to the unevenness of the metal, which should be no cause for rejection, as we know through the tests given before it was sent out. As to the fifty four pieces with short couplings, this was not sent you as line pipe at all, but was sent on account of your order of October 2nd, 1890, for eight-inch black pipe, and we so billed it to you, there being 1,008 feet, 2 inches. We have no fears whatever that all of the line pipe (with the exception of that injured in transit, which can be repaired), if properly laid, will not come up to the requirements and conditions asked of us in the contract or agreement executed with you. As to the statement made by you that the present situation was reached through the failure on the part of the mills to complete the work as promised, we cannot accept same as applying to us, as all the correspondence with Mr. Forman (your secretary then), and our shipments made in accordance therewith will very plainly show. In fact, we were on a number of occasions, owing to the failure to receive shipping instructions after repeated requests, completely blocked up by the accumulation of pipe, and were compelled to provide temporary storage at considerable expense to us. Mr. Forman's correspondence and statements show conclusively that we were the only manufacturers who rigidly lived up to the terms of the agreement, although the agreement stipulated that we should commence shipments August 1st, yet in accordance with the agreement made between the writer and Mr. Forman, we were given permission to extend this time until the middle of the month, then agreeing to make shipments at an average of not less than one-half a mile for each working day. We commenced shipments on the 9th of August, 565 and received instructions to stop on the 21st of September, during which period we shipped you 142,058 inches, or an average of 3,551 inches for each working day. Even should the date of August 1st be taken, our average daily shipments would be 3,022 inches, so that it is plainly seen that in either case we exceeded the average shipments called for in our contract. Under all the circumstances, therefore, it would be unjust and unfair to us to modify your contract in the manner proposed in your letter, and we must respectfully decline its acceptance and ask you to reconsider the question. We have never in our experience had a similar trouble nor in the many lines we have built for Oil and Gas Companies re-

ceived anything but universal praise for our work. We appreciate your position in the matter and are willing to do all in our power to aid in its adjustment, even, if necessary, with loss to ourselves, if proper fairness and justice be done us, and if we are met in the same spirit, have no doubt some satisfactory basis of settlement may be reached.

Awaiting your further advice in the premises, we are

Very respectfully yours,

F. C. SMINK,

*Treas. & Genl. Mangr.*

P. S. We might add in this connection that prior to the suspension of your shipments we received an order for eleven miles of 8" line pipe from another Gas Company, and shipped on alternate days to both you and them the same pipe exactly, all of which was inspected at the mill by an expert of well known reputation sent here by the Standard Oil Company, who pronounced it as ranking with the best line pipe he had ever inspected. In fact, his endorsements, which we have in our office, were such as to stimulate our pride somewhat. These were afterwards confirmed by the Gas Company who received and laid the pipe."

Thereupon the plaintiff offered in evidence copy of a letter from the Crane Company to the Reading Iron Company, dated January 21st, 1891, and read the same to the jury as follows:

JAN. 21, 1891.

*Reading Iron Company, Reading, Pa.*

566 GENTLEMEN: We are in receipt of yours of 19th inst., and note the contents. Have notified the Columbus Construction Company that you decline to make the modified arrangement which they have proposed.

We are doing all that we possibly can to arrive at an amicable and fair settlement of this matter, and hope to be able to make you a further report very soon.

In the meantime, referring to your postscript, in which you speak of the sale of eleven miles of 8-in. line pipe to another gas company, which was pronounced the best line pipe inspected by the inspector, and that you have his endorsements in your office, which were afterwards confirmed by the gas company that received and laid the pipe, we would say that it might be of assistance if you could forward to us the originals, if they are in such form as would clearly set forth the point that you claim in regard to the superiority of your pipe.

Referring to your claim as to correspondence with Mr. For

man, etc., we will not attempt to look it up just now, because we hope the matter may be otherwise adjusted.

Very truly yours,

CRANE COMPANY.

A. M. GILBERT,

*Vice-President.*

Thereupon the defendant offered in evidence a letter from Smink to Gilbert, Vice-President of the Crane Company, dated February 19th, 1891, as follows:

Reading Iron Company.

READING, Pa., February 19th, 1891.

*A. M. Gilbert, Esq., Vice-President Crane Co., Chicago, Ill.*

DEAR SIR: I am disappointed in the remittance forwarded by your treasurer, inasmuch as it simply included the Philadelphia account, leaving a balance due on the Chicago account of some \$43,000. I am sorely pressed for funds and must request a remittance on this account. I can hardly consider it exactly fair 567 or proper treatment, and my mind is somewhat disturbed as to the cause of this lack of your hitherto usual promptness in all remittances. Our business being all done on a cash basis we cannot very well afford to carry accounts three or four months without some settlement, and I trust you will appreciate the situation and see that a remittance is sent us at once.

How are matters progressing in the adjustment of the 8" line affairs? Our Mr. Safford, who has just returned from the Pittsburgh pipe meeting, tells me that he was informed by some of the parties who had furnished part of this line that they were paid in full. Can it be true that we have not received the same treatment as shown all the other manufacturers? I have certainly been very patient and fair in all concerning this matter and I simply ask a similar return and will be glad to have your expressions thereon.

Very respectfully yours,

F. C. SMINK,

*Treas. and Genl. Mangr.*

Thereupon the plaintiff offered in evidence copy of letter of February 21st, 1891, Crane Company to Smink, and read the same to the jury, as follows:

Feb. 21, 1891.

*F. C. Smink, Esq., Treas'r and Genl. Mgr. Reading Iron Company, Reading, Pa.*

DEAR SIR: Yours of the 19th inst, received. We thought,

from a previous correspondence and from the talk with your men here, that you fully understood the pipe line question.

The Columbus Construction Company withhold payment to us on account of the damaged pipe, their claim being that over \$40,000 worth of your pipe is so damaged; and not only do they give that as a reason for holding back on your pipe, but they make it their principal argument in assuming the position which they do for the future.

Now, we advised you earlier of the situation in regard to this, 568 and your first advices to us were to go ahead and put the pipe in order.

As soon as we received the inspector's report, we sent you a memorandum of that; and you then sent out your superintendent and wrote us to the effect, as we understand it, that you rescinded your previous advices to put the pipe in order, assumed a different position and wished the pipe put in the line before you allowed any claims.

This position upon your part ties our hands, and we are unable to do anything more until a decision is reached by the Columbus Construction Company as to what they will do.

We are a great deal more anxious than you can be to get this matter settled and wound up, but seem to meet with any quantity of delays. At present Mr. Yerkes is absent from the city and will not be back for another week; therefore we do not suppose anything can be done until that time. But as it is the condition of your pipe, and the position you take in regard to it, that prevents our receiving our money, we thought you fully understood that you were not to call upon us for this amount until it was adjusted.

We think you have no cause to complain of our promptness upon our regular business, and if you make us the large shipments which we hope you will on this month, it will not be long before we shall be able to give you quite an amount of cash or acceptances.

Relative to what your Mr. Safford says, would say, as we think we have previously explained, there were certain mills who refused to sell pipe subject to any other inspection than mill inspection. (We are certain that we mentioned this to your superintendent when he was here and thought he fully understood it, even if you previously did not.) There is, therefore, no outstanding claims against such mills and they have been paid in full. The writer regrets that any of the mills did anything else than sell subject to mill inspection, as it has made a very complicated state of affairs, of which it is difficult to see the end; but we are using every effort in our power to get it straightened out and will communicate with you promptly as soon as we can procure any decision in regard to it.

569 You say that you have been very patient in regard to the mat-

ter, but you must look at the other side of this unfortunate affair, which is that your pipe is largely, if not wholly, responsible for the great amount of trouble that has ensued.

Very truly yours,

CRANE COMPANY.

A. M. GILBERT,  
Vice-President.

Thereupon the defendant offered letter, Smerk to Gilbert, vice-president, dated Feb. 24th, 1891, which letter is as follows:

READING IRON COMPANY,

READING PA., February 24th, 1891.

*A. M. Gilbert, Esq., Vice-president Crane Co., Chicago, Illinois.*

DEAR SIR: I own your favor of the 21st inst. on the line pipe question. There seems to be some slight misunderstanding I see regarding the position assumed by us. Our first advices from your company contained the information that, owing to certain damages received in transit, some of our pipe had been rejected. Early in the month of December, I visited Chicago, and after an examination of some of the pipe so rejected, arranged with Mr. Crane and his superintendents that it should be repaired and we would bear the cost of same, it being casually estimated during our conversation that such cost might reach \$1,000 to \$2,000. On or about the first of the present year we were almost dumbfounded to receive a report of the rejection of some 2,500 pieces, of which some 1,400 were said to have *scant threads*. This being an entirely new feature in the case and one which we could not understand, I sent our superintendent to examine into same, only to learn that certain points of superiority we claimed in our threads were looked upon adversely by the party who inspected the pipe. This is the point on which we stand, as any attempt to recut these threads, in our opinion, would result in impairing it to such an extent that it would be useless for the purpose intended. We do not so much object to repairing that which was damaged in transit, although much of this, we believe, was done by the carelessness of the Construction Company's employes; but we do object to being called upon to repair damages or remove causes that do not exist. The most astounding revelation, however, is contained in your statement that the other manufacturers sold you the pipe subject only to mill inspection, it being the first intimation I ever received that there was a particle of difference (other than in the price) in any of the contracts made by you with the different manufacturers. When the former secretary of your company, Mr.

Forman (to whom we had formed quite a strong attachment due to our pleasant relations with your company) first approached me regarding this line I expressed my doubts as to our ability to furnish any, as we were very much crowded at the time. His representations of the injury that might be done him, if he failed in the accomplishment of his contracts (the details of which he confidentially related to me) were so earnest and his importunities so pressing that I was prevailed upon to help him in his extremities, although in so doing I was obliged to disappoint some of our most valued customers. In discussing the various features of the proposed contract and stating my objections to certain clauses, more particularly the one relating to the inspection, he replied, 'that will be all right. You know with whom you have to deal. Give your mind no uneasiness, as you can never have any trouble with the Crane Company.' On the strength of all this, I accepted and agreed to help him out (particularly as he said that time was a most important feature), which, as you know, we did, and now to learn that deception and duplicity were used in leading me into the contract, incenses me to a degree I have not felt heretofore in this affair. Our patience, I presume, must still further be taxed in awaiting the result of your negotiations with the Construction Company, which I trust may soon be developed and your definite decision communicated to us in the matter.

Very respectfully yours.

F. C. SMINK,  
*Treas. & Genl. Manager."*

571 Thereupon the plaintiff offered and read in evidence copy of letter from Gilbert to Smink, dated February 26, 1891, which is as follows:

FEB. 26, 1891.

*F. C. Smink, Care Reading Iron Company, Reading, Pa.*

DEAR SIR: I am in receipt of yours of the 24th inst., and note the contents.

We have certainly misunderstood your position somewhat. As we now understand it, you object to making any allowance or having anything done upon the scant thread pipe, but upon the pipe that was bruised or otherwise damaged you would be willing to have us put it in order if, by so doing, a settlement of the matter could be reached.

Mr. Yerkes, the vice-president of the Columbus Construction Company, has been absent from the city for the last ten days. We have notified him that a decision in the matter could be no longer delayed, and hope to be able to procure same before many days.

I regret very much to hear that you consider that Mr. Forman

deceived you in relation to any feature of this contract, and think it is very probable that at the time he talked with you all the arrangements he had then made, had been made upon terms identical with yours. I, however, understand that after making all of the contracts and placing the majority of the pipe upon terms the same as he did with you, there were two mills who declined to furnish pipe upon other terms than mill inspection; with one of them at least the amount was but small, and to provide for the amount of pipe necessary he did so arrange with them.

Of course, as I was not here at the time, I am unable to say exactly how these matters were handled, but I do know this, that it is an extremely unpleasant situation all around, and that we are using our utmost endeavors to get the matter into shape with as little loss and detriment to the mills as possible, for naturally our feeling towards them is much more friendly than it is towards the other party in the case. But you must appreciate the position in which we are placed; we cannot force the matter as rapidly as we would wish, but have to wait as patiently as we can, the action of others.

Very truly yours,

A. M. GILBERT.

Thereupon the defendant offered in evidence a letter, Smink to Gilbert, dated March 2, 1891, which is as follows:

READING, Pa., March 2nd, 1891.

*A. M. Gilbert, Esq., Vice-President Crane Co., Chicago, Illinois.*

DEAR SIR: I thank you very much for your favor of the 26th ultimo on the line pipe question, the contents of which have all been duly noted.

Trusting you may be able to reach a satisfactory conclusion ere long, I am

Very respectfully yours,

F. C. SMINK,

*Treas. & Genl. Mangr.*

(Dictated by F. C. S.)

FEGLEY.

Thereupon the plaintiff offered in evidence and read to the jury a copy of a letter from Forman, secretary, to the Paige Tube Company, which is as follows:

OCT. 3, 1890.

*The Paige Tube Co., Warren, Ohio.*

GENTLEMEN: We are in receipt of the following communication from the Columbus Construction Company, written by their president, Mr. Hequembourg:



"I am advised by our field men that the three inch line pipe shipped by you on account of the contract to Greentown and Swayzee does not conform to the requirements of the contract 573 in this, that when screwed together it will not make a tight line under 325 pound pressure. We have attempted to use some of it for tubing wells, and have been unable to get good results. You will please advise us what disposition shall be made of same at your earliest convenience."

The writer exceedingly regrets being obliged to advise you as above. Further, would suggest that should you see fit to investigate this complaint on the ground (and the Columbus Construction Company have urged that you do so and satisfy yourselves) by sending a man down there, they will endeavor to substantiate, as they believe they can most thoroughly the complaint above made.

We further desire to inform you personally, that the chances are, owing to late deliveries, that the line will not be completed this year, in consequence of which we will not be crowded from time to time, quite as hard as heretofore on deliveries.

The writer was down on the line the other day, and noticed several joints with leaks, not only in your pipe, but in several of the other makes. I merely mention this to caution you to be more than particular with your tests. Having, as you will (as I said before) more time in which to deliver, it might pay you to be more careful in your work than heretofore. Most of the leaks mentioned are on the mill end of the joint. To all appearances they look perfect, and we have no doubt that the same occur from the dies being somewhat dulled or worn down.

This point you might also mention to your people in the mill, and have them watch it.

Very respectfully yours,

GEO. L. FORMAN,  
*Secretary.*

(Dictated.)

The defendant then offered letter from Paige Tube Company to the Crane Company, dated October 6, 1890, which is, as follows:

WARREN, O., October 6, 1890.

*Messrs. Crane Company, Chicago, Ill.*

574 GENTLEMEN: We have your favor of the 3rd inst., and regret exceedingly to hear the complaints contained therein. The eight-inch line we have been very careful of, particularly the joints, and we are very loath to believe there will be very much cause for complaint from it. Any way, we will watch it, if pos-

sible, more closely; but we have an inspector of experience, who inspects every joint and piece of pipe before it leaves our mill.

Regarding the three-inch line we will say that we can not understand why it is not good, as it was thoroughly inspected and tested, and that for gas (same being very light) they must expect to cork some of the joints. However, if they are not able to use it, send it back to us at our expense.

We hope you will give us shipping directions on the 10th, that we may commence shipping it immediately.

Yours very truly,

THE PAIGE TUBE CO.,

A. T. PAIGE,

*Treas. & Mgr.*

The plaintiff then offered and read in evidence, copy of a letter dated October 11, 1890, from Crane Company to the Paige Tube Company, and read same as evidence to the jury, as follows:

OCTOBER 11, 1890.

*The Paige Tube Co., Warren, Ohio.*

GENTLEMEN: In reply to your telegram of even date asking for shipping directions for the line pipe, would say, we can not give you definite answer until Monday, as our principals are out of the city, and will not return until then.

We wired you to the above effect this afternoon.

Yours truly,

CRANE COMPANY,

Bishop.

575 Plaintiff then offered and read in evidence copy of letter to A. T. Paige, General Manager, from Forman, Secretary, as follows, dated October 15, 1890:

You will note that although the terms of the contract between your company and ourselves on the eight-inch line pipe are most explicit as to deliveries, we have from time to time accepted your explanation and reasons for delays, without recourse to the aforementioned conditions or forfeits.

The condition of the work and affairs generally for which the pipe was bought, is just this:

The Columbus Construction Company (our principals in the affair) made all the arrangements, hired line men, working gangs, etc., etc., at a fixed daily expense based upon the promised deliveries of the different mills engaged in the filling of their pipe order.

You merely have to look at our own case, that is to say, the delinquencies in deliveries, and assume (which, by the way, you can do) that the others were just as bad, to realize the effect it has had upon the company in question.

To make a long story short, the line passes through a great quantity of swampy land, which at this time of the year is almost impassable, to say nothing of its being out of condition for such work as stringing and laying a pipe line.

At a meeting of the directors held the other day it was therefore decided, after due consideration, that it was utterly impossible to attempt the completion of the line this fall.

The rainy weather down there has now set in, and by the time they are relieved of the water the cold weather will absolutely prevent any further work.

You will readily realize that neither the Construction Company nor ourselves are in any way to blame for this. Both they and we were ready to receive the pipe as per contract, and, further, 576 are willing to receive it and pay for it as agreed upon, with this exception, to wit:

The delays on the part of the various mills having thrown out all calculations for the completion this fall, it necessarily carries the balance of the work on to the coming spring. This not only prevents our testing the pipe as per contract, but should we take same in and it then remained exposed to the weather through the winter, the mills in turn would doubtless be put in a very bad position, considering the guarantee they make of the pipe standing the required tests, etc., etc., after having been exposed as it necessarily would be.

The Columbus Construction Company, therefore, requested us to so fix matters as to have deliveries continue to cease in the meantime, and arrange with the various mills to complete their contract, making four deliveries, to wit: in the months of February, March, April and May. The writer, however, in the interests of the mills, requested them to change deliveries, to January, February and March, and although they have not as yet acceded to such request, I think it can be arranged in this way.

With the tremendous demand for pipe that is on at present, we see no reason why all the mills should not agree to this, particularly when they consider the circumstances necessitating the request. In fact, two or three of them that the writer has been able to see in person, have acquiesced.

Awaiting your reply, I remain,

Yours very truly,

GEO. L. FORMAN, *Secretary.*

(Dictated.)

ed in

577 Thereupon the plaintiff offered and read in evidence to the jury copy of a letter dated December 31, 1890, from the Crane Company to the Paige Tube Company, which is as follows:

DECEMBER 31, 1890.

*The Paige Tube Company, Warren, Ohio.*

GENTLEMEN: We are now in receipt of the report made by the inspectors of the line pipe, by which it appears that out of about 4,800 lengths of 8-inch pipe made by you, they found 776 defective pieces. The defects are largely in jammed and scant threads and in defective couplings.

We should be glad to have you consider what is best to be done with this defective pipe; whether to have it sent back to you, or to have it put in order upon the ground, or brought in to Chicago and put in order.

Other parties having pipe in a similar condition desire us to have it brought in to our shop here and put in shape on their account. They figure that that is the most economical arrangement.

We should be glad to know your views upon this point.

We are hoping to be able within a few days to receive something definite from the Columbus Construction Company in regard to future work, and as soon as we can do so we will communicate with you further regarding the subject.

Yours very truly,

CRANE COMPANY,

A. M. GILBERT.

Thereupon the defendant offered in evidence a letter dated Warren, Ohio, January 5, 1891, addressed to the Crane Company, and signed by the Paige Tube Company, by A. T. Paige, President, which is as follows:

WARREN, O., January 5, 1891.

*Messrs. Crane Company, Chicago, Ill.*

GENTLEMEN: Yours of December 31st, received in the writer's absence. Regarding the 776 pieces of eight-inch line pipe which you claim is defective, we have to say: We consider all the line shipped you settled for, as per your settlement with our Mr. Barber. Our contract with you was that this line should stand the test in the line, which has never been made, and we do not now think we are in any way responsible, as we certainly could not be asked to wait six months or a year, until the line was tested. We know the threads were all right when they left here, and if they are bruised it has been done by rough handling since it left us.

We would also call your attention once more to the 8" line we

have on hand and also the iron to make the balance of the contract. This iron we presume we shall be obliged to take. We have now over eighty thousand dollars (\$80,000) in this line and iron awaiting your decision, and in these times it is too much for us to carry, feeling as we do that we have lived up to our part of the contract in every way, we would once more ask you to make settlement of this without further delay.

Yours very truly.

THE PAIGE TUBE COMPANY,

A. T. PAIGE, *Pres.*

579 Thereupon the plaintiff offered and read in evidence a copy of a letter dated January 6, 1891, to the Paige Tube Company, Warren, Ohio, signed Crane Company, R. T. Crane, President. This letter, except the address, is in all respects identical with the letter of January 6, 1891, to the Pittsburg Tube Company, already given, and hence is not here repeated.

Thereupon the plaintiff offered and read in evidence copy of a letter dated January 7, 1891, directed to the Paige Tube Company, Warren, Ohio, and signed Crane Company, A. M. Gilbert, which is as follows:

JANUARY 7, 1891.

*The Paige Tube Co., Warren, Ohio.*

GENTLEMEN: We are in receipt of yours of 5th inst., and note the contents.

It is true, as you state, that your contract was that the line pipe should stand the test in the line.

The inspection that has recently been made, and of which report was sent you, was intended as one more favorable for you than to have a test in line. The test in line certainly cannot be waived, unless you have your pipe pass inspection in the manner that has now been proposed.

You say you certainly could not be asked to wait six months or a year, until the line was tested.

As you agreed to a test in line without fixing any limit of time as to when that test should be made, we are unable to see how you can avoid being responsible for such a test.

Whether or not the threads were all right when they left your mill is not material, because you agreed to do something farther than to have the threads all right at that time, and agreed that  
580 your pipe should be subject to a further test after it was put in the line.

In regard to the future line pipe, we addressed you a letter yesterday upon this subject, and have nothing further to add, except that when you say you feel that you have lived up to your

part of the contract in every way, we must call your attention to the fact that there must be one vital point—that of delivery—which you have overlooked.

In regard to the payments made Mr. Barber, we have only to say that there was nothing in the way of a settlement made with him.

We are sure that he fully understood that we had not received money, and that no settlement could be made until after an inspection had taken place, the latter payments of money which were given being given as an accommodation; and after doing that, and since then making every effort in our power to do all we can to bring about a favorable winding up of this matter for the mills, we do not think that the position which you assume is either fair or justifiable.

Yours respectfully,

CRANE COMPANY,  
A. M. Gilbert.

Thereupon the defendant offered in evidence a letter dated Warren, Ohio, January 13, 1891, to the Crane Company, signed Paige Tube Company, A. T. Paige, Treasurer and Manager, which is as follows:

WARREN, Ohio, January 13, 1891.

*Crane Company, Chicago.*

GENTLEMEN: Yours of the 6th and 7th instant received and 581 carefully noted. We think you have overlooked or failed to read the rather voluminous correspondence we had about this 8" line pipe with your former secretary, Mr. Forman.

The matter of delivery, in which you claim we did not live up to the terms of the contract, we would call your attention to the clause in the contract, which reads, "unavoidable delays excepted," and our delays were unavoidable, and besides were waived in the letters of Mr. Forman, which you will see if you look them up. Besides we would not have been over four weeks behind the contract time had we been allowed to go ahead. This short delay was caused by reasons beyond our control, viz: the strikes and shortages of gas in Pittsburg where we were getting our iron.

About the matter of inspection, where it is true it was to be inspected in the line (which fact we do not deny), there is reason in all contracts, and you were to have only a *reasonable* length of time in which to place this in the line and inspect it. You will also find this matter covered in the correspondence of Mr. Forman.

The matter of settlements were to be cash in fifteen days after the shipment of each car load (which clause, if you refer to your books), you will find you did not keep, but about which we never made any serious complaint.

Our contract for this line was with Crane Co. We have nothing to do with the Columbus Construction Company whatever, or your differences with them, and we certainly will not ship them any goods on their own account.

We say this not meaning any reflection on their credit, but merely because we know nothing of them and have already sold the line to you, and we have nine miles of the pipe on hand, and the iron to make the balance of same.

We know that our pipe was first-class in every respect, and we delivered it subject to test within a reasonable time in the line, and as it was not laid in the line and tested as it should have been 582 we fail to see how we are to be held for imperfect pipe.

We are ready to commence shipments on your own account at any day you may name, or, we are willing to consider any reasonable offer you may have to make us tending toward the settlement of this difficulty.

You must excuse us for saying again, that our business and contract was with Crane Co. and we have nothing whatever to do with the Columbus Construction Co.

Very truly yours,

THE PAIGE TUBE CO.,

A. T. PAIGE,

*Treas. & Mgr.*

Thereupon the plaintiff offered and read in evidence copy of a letter dated December 2, 1890, to the National Tube Works Company, Chicago, signed R. T. Crane, President, which letter is as follows:

DEC. 2, 1890.

*National Tube Co., Chicago.*

GENTLEMEN: Owing to the condition of the money market, we are somewhat in doubt regarding the completion of the eight-inch pipe line for the Columbus Construction Company. It may be taken up, however, in January, or possibly later on, but we would advise you to make no preparation to furnish this pipe until further notice. Such information as we receive from our principals from time to time will be given you very promptly.

Respectfully yours,

R. T. CRANE, *Pres.*

Thereupon the defendant offered in evidence a letter dated December 5, 1890, addressed to R. T. Crane, president of the Crane Company, signed Chas. A. Lamb, local manager; also 583 a letter enclosed in that letter, dated McKeysport, Pennsylvania, December 4, 1890, addressed to the National Tube



and in Works, Chicago, signed E. C. Converse, general manager, which letters are respectively as follows:

CHICAGO, Ills., Dec. 5th, 1890.

*R. T. Crane, Esq., Pres. Crane Co., City:*

DEAR SIR: On my return from my interview with you I find a letter from Mr. Converse dated Dec. 4th, 1890, a copy of which I enclose herein. I was afraid that the iron had been contracted for as I stated to you in our interview, and under the circumstances will esteem it a favor if you would kindly give us the shipping directions for the pipe that is to first come forward.

Yours very truly,

CHAS. A. LAMB,

*Local Manager.*

I forgot to say that on receipt of your letter I at once sent copy to Mr. Converse."

*National Tube Works Company, Chicago, Ills:*

DEAR SIRS: I am just in receipt of your letter of the 2nd in which you present a copy of letter received from President Crane of the Crane Company. This letter states to you that owing to the condition of the money market, there is some doubt as to the completion of the 8" line, and that it would not be prudent for us make any preparations, etc.

We sold the Crane Company fifteen miles of the 10" and 75 miles of 8" gas line pipe. This contract was entered into 584 some months ago. We prepared to execute it, and did execute such portions of the contract as we were enabled to perform by the receipt of shipping directions account thereof. We provided for material through our own rolling mills and also entered into contracts for iron with foreign rolling mills, by which contracts we are bound. We refused orders from other customers which would have employed our machinery, and have held—and are holding—ourselves in readiness to perform our part of this contract. We have been lenient in asking for shipping directions through a desire to be accommodating, and this because we understood distinctly from the Crane Company, that it was the desire of their customers to postpone their deliveries from fall until winter, because all of the pipe could not be delivered in time to complete the line this fall, and for that reason they desired to make it a spring completion. This concession on our part was voluntary, and in no way depreciated our rights under the contract. The notice for us to make no preparations comes too late, for we have

made all preparations, and have refused business by reason of our obligation to keep ourselves in condition to perform our functions. I was informed that we would receive shipping directions very shortly so that we could turn in and complete our portion of the line. We have in stock large amounts of material ready to deliver, material ready to make up, and a lack of orders for the reasons hereinabove given. The condition of the money market or any other conditions relating to the customers of Mr. Crane, cut no figure in the case as far as we are concerned, and we should be obliged for shipping directions, so that we may no longer suffer loss and inconvenience, through delays, which up to this time we have borne uncomplainingly.

Yours respectfully,  
E. C. CONVERSE,  
*General Manager.*

585 Thereupon the plaintiff offered and read in evidence copy of a letter dated December 6, 1890, addressed to Chas. A. Lamb, general manager, National Tube Works Company, Chicago, signed R. T. Crane, president, which letter is as follows:

DEC. 6, 1890.

*Mr. Chas. A. Lamb, Gen. Manager, National Tube Works Co., Chicago.*

DEAR SIR: I am just in receipt of yours of yesterday in regard to the gas line pipe contract, and also copy of letter from Mr. Converse on this same subject, and in answer to our letter of 2nd inst., to you suggest:

Am surprised that a man of Mr. Converse's experience and position in business would take the position he does in his letter.

As I stated to you yesterday, we do not know what the outcome of this enterprise is going to be. I simply expressed to you my opinion that it possibly might not be carried out, and, of course, in such event these people would not want the pipe. It then would become a matter of negotiation of damages for canceling these contracts.

Any man with a speck of business capacity can see this, and there is no use of any one acting the "hog" in the matter. Would further say that Mr. Converse is the very last man on earth to take such a position, for he knows—as does every one that is connected with this contract—that he has not carried out his part of the contract in good faith at all, and he is the only man in connection with this whole thing who acted otherwise than honorable and liberal.

Respectfully yours,  
R. T. CRANE, *Prest.*

Thereupon the defendant offered a letter of February 9, 1891, to the Crane Company, signed National Tube Works Company, C. A. Lamb, L. M., which letter is as follows:

586

CHICAGO, Ills., Feb. 9, 1891.

*Crane Company, City.*

GENTLEMEN: Your favor of Jan. 28th was placed on our Mr. C. A. Lamb's desk for reply; he did not return until this morning, hence the delay in sending reply.

In this letter of the 28th you ask us to reply to your letter of Jan. 6th. Our Mr. Lamb called upon you immediately upon the reception of your letter of Jan. 6th and saw Mr. Gilbert and answered to him verbally the points brought up in that letter. We could not accept the position as considering you simply as brokers, inasmuch as we dealt direct with you and sold the pipe to you.

Our mill is pressing us strenuously for shipping directions for the pipe; we have quite an amount on hand and desire to relieve our yards and also to complete our portion of the contract.

Will you kindly send us by return mail shipping directions that we may relieve ourselves, and by so doing you will confer a great favor upon us?

Yours respectfully,

NATIONAL TUBE WORKS CO.,

C. A. LAMB, L. M.

Thereupon the plaintiff offered and read in evidence copy of letter dated February 10, 1891, addressed to Chas. A. Lamb, L. M., National Tube Works Company, City, signed Crane Company, R. T. Crane, President, as follows:

FEB. 10, 1891.

*Mr. Chas. A. Lamb, M., National Tube Works Co., City.*

587 DEAR SIR: Yours of 9th inst., stating your position in regard to the matter mentioned in our letter of January 6th, is received.

Your answer is just as we imagined it might be and corresponds with all the answers to the same letter which we received from the other manufacturers. We simply asked for your reply so that we might have it on file, but it is now so long since our letter went out that it is of no particular importance.

With regard to shipping directions, which you say your people are pressing you for, would say, that the time at which this work was to be started is up—it was, as we understand it, without looking up the correspondence on the subject, the 1st of February. We have been expecting every day during this month to receive

instructions from the pipe line people to order the work started, but so far have no word whatever, and we have no idea what they intend to do.

It is not within our power to force these people to go ahead with the work and we can do nothing more than merely wait for them to instruct us. We can only say that your people will have to be patient, and as far as any damage growing out of this delay is concerned, we presume we shall be liable for it.

Yours truly,

CRANE COMPANY,  
R. T. CRANE, *Pres.*

Thereupon the plaintiff offered and read in evidence copy of a letter of Geo. L. Forman, secretary to Spang, Chalfant & Company, dated October 9, 1890, which is as follows:

OCT. 9, 1890.

*Messrs. Spang, Chalfant & Co., Pittsburg, Pa.*

GENTLEMEN: Your favor of 7th inst., asking for further shipping directions for 8-inch line pipe received.

588 In reply would say, we are waiting to hear from our principals on this matter, which we expect to do to-morrow.

Please do not ship anything more to Whiting until you hear from us again.

Respectfully,

CRANE COMPANY,  
GEO. L. FORMAN, *Secy.*,  
BISHOP.

Thereupon the defendant offered a letter dated October 16, 1890, from Spang, Chalfant & Company to Geo. L. Forman, secretary, which letter is as follows:

PITTSBURG, Pa., Oct. 16, 1890.

*Geo. L. Forman, Esq., Secy. Crane Company, Chicago, Ill.*

DEAR SIR: Your favor of 9th duly received—in which you were pleased to say that you expected next day to be able to give us shipping instructions for 8-inch line pipe; in this you were doubtless disappointed, if not already sent we will be obliged if you will give us shipping instructions to cover 20,000 to 25,000 feet by return mail.

We are taking advantage of your verbal instructions and are not hurrying the completion of the order, though we expect to complete it next month.

Your friend,

SPANG, CHALFANT & CO.

Thereupon the plaintiff offered and read in evidence a copy of a letter to Spang, Chalfant & Company, dated October 15, 1890, from Geo. L. Forman, secretary. This letter, except the address, is in all respects like the letter of October 15, 1890, to the Paige Tube Company already given in this bill of exceptions.

Thereupon the plaintiff offered and read copy of letter from R. S. Crane, president, as follows:

DEC. 19, 1890.

589 *Messrs. Spang, Chalfant & Co., Pittsburg, Pa.*

GENTLEMEN: Your favor of 13th inst., at hand and noted. In taking up this matter of the Line Pipe (Mr. Foreman who has had it in charge, being no longer in the employ of this company), would say, I notice by the correspondence that this company has acted in the business as brokers. This, however, may not cut any special figure; we realize that you look to us largely, if not wholly, to see that you receive pay for your pipe.

There is one radical trouble in connection with this matter just now, and that is the condition of all of this pipe that has been delivered on the ground; the facts are, that the threads are in very bad shape. We have not a full report on this subject, but as far as we know to-day, about 25 per cent. of the threads will have to be recut.

I understand that this question came up long ago, complaints having been made to our company of these conditions, and that you as well as the other mills have been cautioned on this subject.

Some three or four weeks ago, when we were pressing the Construction Company for more money on this job, they took the ground that they would not advance any more money until this pipe had been inspected on the ground. They then appointed a man to inspect it, and we also appointed one to go with him and act in our interests as well as yours.

The report of this inspection is not quite finished, but it will show about as we have indicated above.

We do not think it will be possible for us to get any more money from them until this matter is made right. They claim to have money in the banks here to pay everything that is properly due, and so far as we can judge, we have no positive evidence that they intend asking anything but what is right and fair.

We would say that the Construction Company now owes us in 590 the neighborhood of \$60,000. We have paid the manufacturers considerably more than we have received from the company. You can therefore see that we have done all that the manufacturers can ask of us under the circumstances.

This matter has been a source of the greatest anxiety to us from the beginning, and we should have been much better off had we had nothing to do with it; and while you may feel that you are

justly entitled to your balance, yet when you take all these circumstances into consideration, I think you will see that we have done all that it was possible for us to do.

You may say that your contract was simply to deliver this pipe under inspection at your mill, and that you have nothing to do with its condition when it arrived on the ground.

We might as well understand each other in this matter now as any time, and in regard to this point would say, as I understand the case, the arrangement between you and Mr. Forman was that he should appoint an inspector for your mill. But it seems that he was unfortunate in these inspectors, they turning out bad in half a dozen cases, and being drunk, according to your report.

I further understand that your people allowed several cars of your pipe to leave your mill at night loaded with pipe that had not passed inspection. Of course, this I only know through the correspondence on file in our office.

It seems to me that these circumstances put you in a position where you must protect the company; that is, it certainly is the company's right that this pipe should be delivered on the ground in good order. If the pipe was in good order when it left the mill, and had proper protectors, it certainly would have been in good order when it arrived on the ground, which is not the case; your pipe is fully as defective as any of the others.

This brings up to the question, what is going to be done to fix this pipe up? In regard to this would say, that Mr. Smink, of the Reading Iron Company, whose pipe was shipped partially by water and was found to be in very bad condition when it arrived on the ground, fully appreciates that it is his place to make that pipe good. While visiting us a couple of weeks ago, we suggested to him that we employ a man to superintend the fixing of this pipe. A great deal of it is at a station where there is an elevator, and we presume we can arrange to get power there, put up a machine and overhaul the pipe in that neighborhood.

The man whom we sent to inspect the pipe down there seems to be a very capable person, and we suggested putting him in charge of the work, which Mr. Smink consents to. We will keep an account, and simply share the expense of doing the work.

The worst feature of this question is that a great deal of the pipe has been strung along through the country, and now has to be teamed in to some place to be re-cut, consequently the expense is going to be pretty heavy.

I simply call your attention to all these matters so that you may have the whole subject before you.

Will you please let us know your views, and oblige,

Yours truly,

R. T. CRANE, *Pres.*

PITTSBURG, Dec. 20, 1890.

*R. T. Crane, President Crane Company.*

DEAR SIR: Your valued favor 19th, at hand. In the transaction in the 8-inch line pipe we knew only the Crane Company; no others. Our contract was for 25 miles 8-inch line pipe, made with Mr. Forman and young Mr. Crane, really a verbal order; we declined from the first to have any inspection other than at our mill; that was fully understood and agreed to by your people, putting inspector at the mill, and when inspected our obligations ended, and that inspection was more rigid and hypercritical than you yourself would have wished. No better pipe ever was made or delivered than we made under your orders and shipped by your instructions to the Columbus Construction Co.

There was not any pipe forwarded that was not fully inspected. We took care that the pipe was up to the full requirements even if your inspectors were drunken, which extended, we believe, to only one.

Notwithstanding the inspection was at the mill, word came to us that the pipe in cars Nos. 1394 and 2739 to Vermont, Indiana, was in very bad condition, and that the parties would not receive the pipe from the R. R. Co. While we had the inspection at the mill, had a right to be satisfied therewith, we sent a man from our office to investigate the trouble in the said two car-loads, who with Mr. Kilgore from your house visited Kokomo and saw the said two car-loads, not yet unladen, and found that they had been tele-scoped by the railroad I. E. injured in the transportation, loaded on gondola cars, and all the pieces in the upper part of the cars, by being jammed together, were more or less injured in the threads. None injured so much however, that the pipe could not be used to make a good line; in justice to a man called Thompson who had charge of the business along the line, it is fair to say that he would not receive the pipe until he had word from some one higher in authority than himself to receive the pipe, which was ours. Now we doubt not Mr. Kilgore will confirm the above statements. We only write it to show that we went beyond our agreement to see that the pipe was even delivered to you in good condition.

What Mr. Smink has done under his contract entirely different from ours, in no wise applies to us.

At your request we have given you our views in the matter.

For your sake we heartily coincide in your views that you would have been better off had you never had anything to do with the order. This fully applies to ourselves. Had we never had the order, we would have sold the like quantity of pipe and more at much better prices. We fully believe that you want only that



which is just, and we are sure that we only want that which is right, both being thus disposed, the end will doubtless be mutually satisfactory.

593

Your friend,

SPANG, CHALFANT & CO.

Thereupon the plaintiff offered copy of a letter dated January 6, 1891, to Spang, Chalfant & Company, signed Crane Company, Gilbert; which letter, except the address, is in all respects like the letter of that date to the Pittsburg Tube Company, already given in this bill of exceptions.

Thereupon the plaintiff offered in evidence copy of a letter of February 18, 1891, from Crane Company to Spang, Chalfant & Company, which letter is as follows:

FEB. 16th, 1891.

*Messrs. Spang, Chalfant & Co., Pittsburg, Pa.*

GENTLEMEN: Referring to the line pipe matter, regarding which you have said that you would like to have a decision as early as possible, and about which you have been kind enough to say that we might please ourselves as to whether it was continued in force or was canceled, we would say, that we have been endeavoring to get this matter decided, but have met with annoying delays, and the end seems farther off than ever. We will therefore avail ourselves of the privilege you offered us, and cancel the remainder of the pipe line order.

Yours very truly,

CRANE COMPANY,

A. M. GILBERT,

*Vice-President.*

(The defendant objected to this letter as immaterial and incompetent, and thereupon the court sustained this objection and refused to admit the letter in evidence; to which ruling of the court the plaintiff, by its counsel, then and there duly excepted.)

594 Thereupon the plaintiff offered and read in evidence copy of a letter of October 7, 1890, to Morris, Tasker & Company, Philadelphia, signed Crane Company, Bishop, as follows:

OCT. 7. 1890.

*Messrs. Morris, Tasker & Co., Philadelphia, Pa.*

GENTLEMEN: Our principals in the construction of the pipe line, for which you have during the past two weeks furnished a large quantity of eight-inch pipe, have been compelled repeatedly to reorganize their forces owing to the many delays that have occurred

in obtaining the pipe; in fact, the business along the line has become so mixed up for this reason that it will be absolutely impossible for them to receive any more pipe at present, until they can get their forces straightened out again. In consequence we have to-day wired you to not ship any more line pipe on our orders for the Columbus Construction Company until further notice, which we now beg to confirm.

This request refers particularly to the six-inch line pipe which you are now shipping to Greentown, Indiana, and also, of course, to the four-inch for same point.

Please acknowledge receipt of this letter and oblige,

Yours respectfully,

CRANE COMPANY,  
Bishop.

Thereupon the defendant offered a letter from Jonathan Rowland, president, to Crane Company, dated January 17, 1891, which letter is as follows:

OCT. 7th, Ohio.

*Morris Tasker & Co., Philadelphia, Pa.*

Do not ship any more line pipe on our orders for Columbus Construction Company until further notice.

CRANE COMPANY.

595

MORRIS TASKER & COMPANY,  
Philadelphia.

JANUARY 17th, 1891.

*To Crane Company, Chicago.*

GENTLEMEN: During the visit of the writer to Chicago during the first week of last December, at an interview with your Mr. R. T. Crane respecting the balance due us on account of line pipe furnished you last fall, he was informed by Mr. Crane that the matter would be adjusted at once, and that a check for the balance of the account would be forwarded us either the latter part of December or in the early part of January.

At that time you were paid on account \$6,000. Since then we have called the attention of your company to the matter on one or two occasions, but as yet have had no remittance forwarded us. We desire again to remind you that the account is three months overdue, and we desire a settlement to reach us by the 21st or 22d of this month.

Kindly take this matter up and let us hear from you promptly.

Yours very truly,

JONATHAN ROWLAND, P.

P. S.: Statement of account is herewith enclosed.

Thereupon the plaintiff offered and read in evidence copy of a letter dated January 21st, 1891, from Crane Company to Morris Tasker & Company, which letter is as follows:

JAN. 21st, 1891.

*Messrs. Morris Tasker & Co., Philadelphia, Pa.*

GENTLEMEN: We are duly in receipt of yours of 17th inst., and note the contents.

It is Mr. Crane's recollection that he did not make as positive a statement as you advise, but that he said that he hoped and expected the matter would be adjusted before this time, and then 596 it would probably be adjusted with you. But, however that may be, we certainly did not at that time expect there would be any such amount of damaged pipe as has since proved to be the case. Upon receipt of those advices we promptly notified your Mr. Agnew here (in accordance with your instructions of last fall), that if there was any of your make that was defective you did not want it to go into the line, and wished him to take care of it. Since the receipt of yours of the 17th we have asked him about this matter, and he does not seem to have any definite advices from you upon this subject.

Now, if you take back that pipe, as you did the small quantity previously that was damaged in a similar way, it will amount to more than this balance.

Of course if you should decide that you preferred to have the pipe tested in line, rather than to consent to any other test, we presume that the Columbus Construction Company would be obliged to conform to your wishes in that respect; but the question arises whether it is policy to wait for a test in line.

We are a great deal more anxious than you can be to get this line pipe matter adjusted.

Awaiting your further advices, we are;

Yours very truly,

CRANE COMPANY,

A. M. GILBERT,

*Vice-President.*

Thereupon the defendant offered a letter dated Jan. 28th, 1891, to Crane Company from Morris, Tasker & Co., which letter is as follows:

"CHICAGO, Jan. 28th, 1891.

*The Crane Company, Chicago.*

GENTLEMEN: Referring again to the contract for 8-inch line 597 pipe furnished you last year and to the unsettled balance due us on account, we will say that while we cannot add much

more which will better define our position and construction of the contract than given in our letter to you of the 26th inst., we think that perhaps we can more strongly emphasize our meaning of the clause in the contract which calls for a test of the pipe in the line and which says that such test shall be made with 'reasonable promptness'. Upon all other points there seems to be no material difference of opinion between us. We contend that 'reasonable promptness' has not been exercised by your company, and that under our contract and by the general custom of trade, we are not bound to wait for months for such a test to be made, especially while doing that time the pipe is entirely out of our control and is exposed to the open weather during the worst season of the year, much of it being stretched out upon the public streets and liable to damage to the threads at any time being struck by passing vehicles. In many cases the protectors have been removed from the threads, the pipe is almost covered with dirt and the ends are lying in close proximity to the traveled roadway. The writer yesterday, after leaving your office went out to one of the streets where the pipe has been distributed, and found just such a condition of affairs as described above. This pipe when it left our mill four or five months ago was perfect in every respect and filled the specifications as required. Every length was tested and the joint made at the mill will be found tight; but we think that when this pipe is screwed together that unless very great care and much more than is usually given by workmen is exercised, it will be found in many instances that it cannot be made so tight as was contemplated. The threads both on the end of the pipe and in the socket are covered with dirt and sand, and to insure the perfect joint which will stand the test required, it is necessary that they shall be entirely free of any dirt. We believe that had promptness been exercised and due care in the handling of the pipe at 598 the time it was received it could have been put together and very little trouble would have been experienced. We are willing to accept such a construction of the contract as gives your company an indefinite length of time in which to put the pipe together and submit it to this test, while during that time the pipe should be entirely out of our control. We desire to reach an amicable conclusion in this matter, and trust that upon further reflection by yourselves you will see the justice and equity of our position. We again call your attention to the balance long past due and ask for settlement. Please advise us promptly of your action.

Awaiting your reply, we are

Yours very truly,

MORRIS, TASKER & Co. (Incor.)

JONATHAN ROWLAND, P.

Thereupon the plaintiff offered copy of letter dated January 31st, 1891, to H. Agnew, Agent, Morris, Tasker, & Co., signed Crane Co., Bishop, which letter was read in evidence as follows:

JANUARY 31st, 1891.

*Mr. H. Agnew, Agent, Morris, Tasker & Co., City.*

DEAR SIR: Complying with request made by Mr. Rowland of your company when here a few days ago, we send you herewith statements of the inspection and also the shipments of the line pipe furnished by your company on their contract with us.

This report of the inspection, while it may not be entirely correct, is certainly approximate as nearly as we can get at it from the material that we have. With regard to the statement of shipments, would say, that same is prepared from our record as made up from your invoices, and not from the pipe as received.

Yours truly,

CRANE CO.,

BISHOP.

599 Thereupon the plaintiff offered and read in evidence from George L. Forman to the Pittsburg Tube Company, dated July 7th, 1890, which is as follows:

"Your favor of the 5th inst., at hand. Concerning the couplings sent you by Mr. Converse, would say that this was done at our request, although your couplings may be perfectly satisfactory to you, we know nothing about it, and it might not be to us. The point in question is this, we desire the coupling to be extra heavy, to stand a pressure of 1000 pounds to the square inch, to have eight threads to the inch, and to have  $\frac{3}{8}$  inch taper. You can very readily see that, taking pipe from nearly all the mills as we do on this contract, should there be any variation in the joint a great deal of trouble will arise. We send you the coupling to avoid all such contingencies and shall require the coupling you furnish to conform to same as to recess, threads, etc., etc. Concerning the weight that you will have to determine yourselves, knowing that the contract will call the same to stand a pressure of 1,000 pounds to the square inch, as we stated before."

Thereupon the plaintiff offered in evidence a letter dated July 9th, 1890, from Forman to Lyon, President of the Pittsburg Tube Co., which letter was read in evidence as follows:

"Enclosed please find contract for the forty miles of eight inch line pipe which you so kindly agreed to furnish the writer while at the meeting in New York. You will notice that same is virtually a copy of the contract as used by the Standard Oil Company, and

having had large dealings with that company you will doubtless see fit to prove this contract *in toto*.

Kindly fill out the blank spaces as to deliveries, etc., etc., and in doing so you will confer a great favor upon our company if you will endeavor as far as possible to give us very prompt deliveries. We should like as much of the pipe in July and August as you can possibly give us, and should you be able to complete the order during these months it will help us out very materially.

600. With regard to the couplings, would say that we would like you to adopt the extra heavy couplings as made by the National Tube Works for their standard oil well line work. We have requested them to forward you a sample of this coupling, and you will strictly observe the gauge, to wit: eight threads to the inch, with five-eight-inch taper, etc., etc. The strength we leave entirely to your judgment, in as much as you will note by the contract that you have to guarantee that same will stand a pressure of 1,000 pounds to the square inch. Upon the return of the enclosed contract signed, we will send you formal acceptance of same.

"Trusting you will find everything satisfactory and with the hope that you can give us even closer deliveries than you imagined when in New York, we remain."

Thereupon the defendant offered and read in evidence a letter from the president of the Pittsburg Tube Company to Forman, dated July 8, 1890, which is as follows:

"Referring to the eight-inch coupling to be sent us by the National Tube Works Company, which by the way, we have not yet received, we have to say that your remarks are very much of a surprise to us. This is the first intimation we have had that there was to be anything special about the eight-inch line pipe. You should certainly be well acquainted with our eight-inch line pipe couplings, as we have sent you a great many of them on pipe. We make the regulation line coupling, and yet it is very possible that a slight, very slight difference may exist in different mills. If we had to change our dies and taps in our threading and tapping machine, it would involve a very considerable expense and could hardly be done inside of two or three weeks' time. We think that anything of this kind should have been brought up when giving the order, and we simply seek to make it quite clear that our eight-inch line pipe is all right. We have already bought all the socket iron for the pipe and have made a considerable number of sockets. We really do not think there can be any material difference in our socket from any others.

601 In the matter of recessing the different mills have different

ways which do not interfere in any way with the putting together of the pipe.

"We hope when the coupling is received that will be no serious trouble, and we do not wish to anticipate any, but merely to let you know our position. You will recollect that the writer spoke to you concerning our inability to store the pipe, and we hope that you will immediately give us shipping directions, as we hope to be able to commence, at least on a single turn, to make the pipe within a couple of days."

Thereupon the plaintiff offered letters from Forman to Paige, general manager Paige Tube Company; Rowland, vice-president Morris, Tasker & Company; and Smink, general manager of the Reading Iron Company, all in substance like the letter of July 9, 1890, from Forman to Lyon, president of the Pittsburg Tube Company, already given, except that the letter to the Reading Company contained the following language:

"Kindly fill out the blank spaces as to deliveries, etc., etc. We trust you will be able to do even better than ten miles in August. Of course we should like to get some from you in July, but take that to be an utter impossibility; however, we should be very glad to have you increase the shipment over the ten miles promised for August as much as you possibly can. The coupling, as you will notice, is to be extra heavy, eight threads to the inch, with five-eighth-inch taper joint, in fact exactly the same as used by the Standard Oil Company. We suppose that your dealings with that company and the work you have done for them will make it unnecessary for us to send you a sample of the coupling. In the case of some of the other mills we have had the National Tube Works Company forward a sample of the Standard Oil coupling, in order that the whole work might be uniform, and should you also desire this, we shall be pleased to have same forwarded to you at once."

Thereupon the defendant offered and read in evidence a 602 letter from Spang, Chalfant & Company, to Forman, dated July 11, 1890, as follows:

"Your favor of 8th at hand. We have ordered the iron for your pipe and will commence next week its manufacture. We have stricken out the seventh clause altogether. We cannot sign a contract of that kind. We will make your pipe equal to any made. You can, if you wish, place a man at our mills to see it tested. We cannot, however, submit to the test proposed in section 7, under which there may be so many contingencies in the way of the work of others, over which we have not any control, that we do not feel safe in signing the contract with that clause



or section inserted. We have asked the National people, as you have suggested, to send us a socket, which they said they would send us this day. We will give you A1 pipe. Please send us the contract as we have stated."

Thereupon the plaintiff offered a letter from Forman to Spang, Chalfant & Company, dated July 15, 1890, which was read in evidence, as follows:

"In reply to your letter of 11th inst., returning contract, would advise that you start in making the pipe at once, and in the meantime writer will see our principals in the matter and endeavor to have the contract worded in the manner suited to you. We are sorry, however, that you take any exceptions to it whatsoever, especially as the other mills have returned theirs signed. As we said before, if our principal will agree to the change, as made by you, we will take pleasure in forwarding new contract to you by next mail."

Thereupon the defendant offered in evidence a letter from Lyon, president of the Pittsburg Tube Company, to Forman, dated July 12, 1890, which was read in evidence, as follows:

"Your favor of 9th inst., covering contract which you ask us to sign, for the supplying of forty miles eight-inch pipe, which we agreed to make for you, is to hand. It is simply out of the question for us to sign such a contract. We sold you forty miles

of good merchantable eight-inch line pipe. When the writer 603 asked you what the requirements were to be, you stated that it was simply to stand pressure, and particularly mentioned the fact that there was not to be any inspection of blisters, although as a matter of course if the blisters were of such magnitude as to unfit the pipe for use, we could not ask you to take it.

"You say your contract is virtually a copy of those used by the Standard Oil Company. This we know nothing about, as the Standard Oil Company have never asked us to sign a contract of any kind, although we have supplied them with pipe as large as ten-inch for some of their lines. Furthermore, in speaking of the order you wished us to take one of the points you made that the inspection was nothing like that of the Standard Oil Company.

"We have invariably declined, and intend to continue to decline, to see any pipe whatever subject to inspection in the line. If our own inspection is not considered satisfactory, we are perfectly willing and even anxious to have any competent person inspect the pipe at our mills as it is shipped.

"Such a contract as you wish us to sign, even if we were willing to submit to a line inspection, involves us in a liability to

consequential damages. The principal reason why we have always objected to inspection in the line is that we have to guarantee the work whether it be good or bad, of the people putting down the line. If they ruin the threads on the pipe by carelessness or otherwise, which we know they frequently do, it all comes back on the mill supplying the pipe. As to paying damages for non-fulfillment of shipments, this we also decline to do.

"We have agreed, and are willing to agree, to give you the sole use of our mill on which we make eight-inch pipe, and to use all due diligence, in completing your order, and hope to ship from two and one-half to three miles per week, but will not bind ourselves to an exact time. This point was also spoken of to you by the writer when we had our last conversation about it. We

returned you the contract marked so as to show those parts  
604 that we objected to.

"We are making the pipe, but we have not yet received any joint from the National Tube Works Company, although we have stirred them up about it more than once. Awaiting your reply and again assuring you of our entire willingness to make the pipe in accordance with the way we have agreed, and as promptly as possible, we are."

Thereupon plaintiff offered and read in evidence letter of Forman to Spang, Chalfant & Company, dated July 16, 1890, as follows:

"We have deferred answering your corrections on our form of contract until we could hear from the other mills. We are in receipt of remainder of the copies of the contracts that we sent out today, everybody having signed, and are willing to take their chances on fulfilling the requirements stipulated in same. Now, if you make, and we know you do, just as good pipe as any of the rest of them, we think, under the circumstances, with the information we give you, that you can see your way clear to agree to the stipulations, same as the other manufacturers. The contract in question is the one used by the Standard Oil Company. Before submitting it to any of the manufacturers whatsoever, the writer took particular pains to ask Mr. Converse, of the National Tube, if any of the requirements were unfair to the manufacturers, to which he replied that in his opinion they were not, that their company had produced hundreds of miles of pipe for the Standard under these contracts without any trouble whatsoever, and backed up his assertion by signing same and taking sixty-five miles of the line.

"If we had it in our power to word the contract so as to suit you, we should gladly do so, but we, as you are aware, are only



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**CARD 6**

brokers, and our principals insist that these requirements be carried out. They have the very best and most experienced line pipe men engaged to connect the line up, and their experience heretofore has always been, so they say at least, that leaky joints generally happen on the manufacturers' end of the pipe rather than on the line pipe mens' work. You must rest assured of one thing, that our principals are not very exacting, and anything like good fair work will be accepted by them without any complaint.

"On receipt of this letter we wish you would start at once on the work. The writer leaves for New York this afternoon and will see Mr. Chalfant either at the pipe meeting or the day following in Pittsburg, should he be unable to attend, at which time we feel sure that the exceptions you take can be rectified. In the face of this letter, should you still have any hesitancy to start on the work, kindly wire me on receipt of same, care of the Murray Hill Hotel, New York, and I will wire you further instructions on the matter."

Thereupon defendant offered in evidence a telegram from Spang, Chalfant & Company, to Forman, dated July 17, 1890, which was read in evidence as follows:

"Any tests you please made at our mill will be satisfactory. Will commence making pipe, and will see you here to agree as to detail."

The defendant also offered and read in evidence a letter from Lyon, president of the Pittsburg Tube Company, to Forman, dated New York, July 19, 1890, as follows:

"We have your telegram from New York, in answer to ours yesterday. We also insist on filling the eight-inch order, and just as it was sold, but we must again say, and finally, that we will not sell the pipe subject to line inspection. If such a thing had been even hinted at when you and the writer were together, it would have been immediately objected to on our part. And if it was known to you as being one of the requirements it is a strange thing it was not mentioned.

"If, as you say, all the other mills who are at work on this order have signed a contract or contracts, agreeing to a test in the line, it does not change our position at all. We want to make you, and will make you, good merchantable pipe, filling your requirements as to weight and ability to stand pressure, as mentioned by you to the writer personally. An inspection of the pipe in our mill by a competent man to see that it comes up to these requirements, would be perfectly agreeable to us, as already stated to you, and as the pipe, as soon as shipped, goes out of our hands entirely, nothing more should be required.

"If the 'mill ends' leak it can readily be discovered at the mill. A perfect joint at the mill end of piece of pipe can, of course, be made an imperfect one by moving the coupling when putting together. Our position is a fair one and one we have invariably adhered to and will adhere to. We think we could get off five miles of pipe during the next two weeks, if we have shipping direction on Monday, as we will then put the furnace on double turn at once.

"The couplings sent us by the National Tube Works Company was just precisely like our own, except that the recess was perhaps one-eighth of an inch deeper on theirs than ours, and on such couplings as we made after receipt of it we have conformed, although the difference is very unimportant and would hardly be seen unless hunted for.

"The writer may go to the meeting in Philadelphia and will if possible, although something may occur to prevent.

"It might be well to say in closing, that our decision in regard to this eight-inch contract is the unanimous expression of the opinion of the directors of this company in Pittsburg."

Thereupon the plaintiff offered and read in evidence letters dated September 27, 1890, from Forman to Pittsburg Tube Company, Paige Tube Company, Reading Iron Company, Spang, Chalfant & Company, and National Tube Works Company, all substantially identical, each of which letters is as follows:

"We have experienced any amount of trouble by reason of the numerous delays and failure to ship the line pipe as per terms of the agreement. Time and time again our principals in the 607 construction of the line have organized their forces, engaged their men and stationed them at the different points, on the representations we made of shipments based on mill promises, and whereas, we do not in any way wish to infer that you willfully delayed us, at the same time you can easily appreciate that organizations and disorganizations of line pipe forces such as have been going on for the last two months can mix up matters generally and put them in a complicated state.

"At any rate that is the condition of our principals on the line at present, and we in turn shall have to request that you defer further shipments for account of the Columbus Construction Company until the 10th day of October. It is absolutely impossible to receive or take care of any shipments made in the interim until the force aforesaid has been reorganized for the fifth or sixth time.

"We have no doubt that this privilege that we give you for delay will, if anything, convenience you very much and permit

you to go on to other orders that you were holding back on account of our contract. We shall expect you, however, to be ready to start again on the date mentioned, and give us every foot of pipe on the contract that you can turn out on the furnaces set aside for us."

J. C. KILGORE, being called at the instance of the plaintiff for further cross-examination, testified as follows:

I saw the lengths of pipe from which I cut the short pieces of pipe that are in the court room and which were tested with the Kaufman collars in the Crane shop. There was a thread on each end of these two joints, about twenty feet in length, of pipe, but I cut all the threads that I screwed into this test line at the mill. They were all cut at our shops.

608 ANDERSON JOHNSON, a witness called for the plaintiff in rebuttal, testified as follows:

I was employed by the construction company in 1890. Know Button. Heard him along in the last of August or early fall of that year tell some men to go up on the line for the purpose of getting some pipe down the hill. I heard him tell Fleming to take some men and go up on the hill and get the pipe down so they could get at it to drag it across a swale there that appeared too bad to get on with a team. I do not remember anything about Ols being ordered up to do this work.

DANIEL HARRINGTON, recalled on behalf of the plaintiff in rebuttal, testified as follows:

I have been familiar with standard pipe line and collars about fourteen years. Collars that are not tapped straight are sent out by the mills sometimes with standard line pipe. A line laid with such collars looks crooked.

#### Cross-Examination

Have not seen a collar that was not tapped straight for about eight years. Saw a good many of them at Indianapolis; ten and eight-inch collars. By laying the pipe I knew they were not tapped straight. Some were a little more crooked than others and some less.

M. J. BERRY, a witness called on behalf of the plaintiff in rebuttal, testified as follows:

Am foreman for the People's Gas Company. Have laid considerable eight-inch pipe. Have had twenty years, next spring, experience since I started on gas lines. I never knew a leak of gas from a gas line to close itself up. I have seen these eight-inch couplings that were not tapped straight. Am familiar with the heavy collars, one of which lies before me. Such a collar, weighing fifteen or twenty pounds more than what is called the ordinary eight-inch standard collar, I prefer to the ordinary collars. In my opinion the heavier collar would be better calculated to make a tight joint.

#### Cross-Examination.

Have had some experience with leaks in gas lines in Bradford, Pennsylvania. That was a cast iron line. Have had experience with leaky wrought iron gas lines at Bradford. That line leaked until we took it up; it always kept leaking. Observed it one winter and the next spring they took it up. Could not tell you what proportion of the joints leaked. That was three-quarter-inch pipe. I do not know of any eight-inch gas pipe that I had anything to do with when it was leaking out in the field. We had eight and ten-inch pipe in the stations; at our gas stations. We have one station at Fortieth and Wabash, in Chicago, the other station at the state line; another was in East Chicago, Indiana; the next is at Kokomo, Indiana. Had half a dozen leaks at the station at Fortieth and Wabash. Leaked at the joints. Not always in the collars, they might be in the fittings. Don't think we had a collar right in the station at Wabash. I saw the boys calking at Kokomo. Could not tell how many I saw that leaked; there were very few. I have been of opinion that the heavy collars were about the only collar to use since I saw them used in Kokomo. I didn't work on the main line and don't know whether they have to calk there. I saw a gas test conducted on a line of eight-inch pipe about twelve or thirteen miles at Bradford. Part of the line was covered and part uncovered. All but less than a mile was covered. This was cast iron pipe. Don't remember ever seeing a test of eight-inch wrought iron pipe with air or gas. I never worked on an eight-inch gas line; I never saw such a test. I have seen a leak in a six-inch line that would not close up at East Chicago on the line connected with this line



in 1892. This outlet was about 150 feet, and I tested it with gas. It leaked at one or two places in the couplings. We shut the gas off and run in lead and caked it. I never knew a gas man to run the risk of leaving a gas leak. He always stopped it up as soon as possible. I think these collars on the six-inch line have a recess for leading. I never saw that recess in the eastern country.

F. K. WING, a witness recalled for the plaintiff in rebuttal, testified as follows:

I measured the diameter of the short pieces of pipe brought into court by the defendant as having been used in the test at the Crane Company's shops. The internal diameter of that pipe is eight and one-eighth inches. At the outer edge of the pipe it is about one-sixteenth of an inch less than it is back in the pipe. There is no such difference in diameter on the piece which Mr. Kilgore says he started to screw in and got it cross-threaded. This reduction of diameter indicates that the iron has been compressed beyond its elastic limits so it has obtained a permanent set in it for it would have returned to its original shape and diameter. A reduction in temperature from 38 to 33 degrees will involve a decrease in air pressure of about nine and three-tenths pounds to the square inch. A rise in temperature from 33 to 36 Fahrenheit will tend to raise the pressure again in the same relative proportion.

#### Cross-Examination.

I think I measured the inner diameter of all these pipes, and I understood they were used in that test over at Crane's shop. All the diameters I measured were just about eight and one-eighth inches. Measured them with a caliper. I had a scale for reading the caliper that read to one thirty-second of an inch. The caliper was eight and one-eighth inches and it would be loose in some places and just a trifle tight in another. The first time I measured pipe before was at Tarrant's shop.

#### Re-direct Examination.

I think these pieces of pipe are a quarter of an inch thick; about a quarter of an inch.

611 C. E. HEQUEMBOURG, being recalled on behalf of the plaintiff, testified in rebuttal as follows:

I know Albert T. Paige and Thomas J. Bray, of the Paige Tube Company. Met them in New York in the summer of 1890 at the Victoria Hotel, June 26th. The plaintiff company at that time had no contract with the Paige Tube Company for the delivery of pipe. There was not at that time any arrangement entered into between Paige and Bray representing the Paige Tube Company and myself representing the Columbus Construction Company that the former company should furnish sixty miles of pipe. I did not at that time give to Mr. Paige and Mr. Bray, or either of them, instructions to follow the sample coupling which I would furnish to them through Mr. Forman, representing the Crane Company, from the National Tube Works Company at McKeesport. I never had more than one interview with Mr. Paige and Mr. Bray at the Victoria Hotel. I did not then give them, or either of them, any instructions on behalf of the Columbus Construction Company as to the manner in which they should make any couplings to be furnished on the Crane contract. This interview occurred before the date of the execution of the written contract in suit, several days before. I did not, on the occasion of this interview, give orders to Mr. Paige or Mr. Bray to wait until I got a sample coupling from the National Tube Works, and that they should follow that exactly in the making of others. I never told Mr. Bray or Mr. Paige at any time prior to the commencement of deliveries under the contract between the Columbus Company and the Crane Company that I would send them a coupling through Mr. Forman from the National Tube Works Company which they must strictly follow in making their couplings to be delivered under the contract, or that they must wait before entering upon the furnishing of any iron under any arrangement that they might make with the Crane Company, until they had received such a sample coupling. When I was along the gas line being constructed by the plaintiff in the year 1890 I never observed any of the employes of the company who were intoxicated while engaged in that work along the line. In my judgment it is not injurious to the making of a tight joint for those engaged in laying the pipe to strike or tap the collar with a hammer while the pipe is being screwed up. This is practiced in the fields and in the mills where the pipe is  
612 manufactured. If a collar is properly put on at the mill it is not possible by rolling the pipe off an ordinary gondola

of  
quem-  
called).

car, on skids twenty or twenty-five feet long, to knock the collar off, even if it came in contact with another joint of pipe in the operation; nor is it possible as to thread protectors if they were properly put on; nor would the collar be loosened by such a method of rolling off pipe. A gas leak where the pressure is maintained at, say 300 pounds, would never close without something being done to repair the line. I have known of collars being sent from the mills that are not tapped straight. The effect of this is that if the joint is crooked enough it may start the pipe cross-threaded, and I have seen sometimes a twenty-foot pipe out six or eight inches from the proper alignment with the pipe immediately preceding it. Some of my heavy collars were sent on the line in 1891 with left-hand threads. They were used to take the place of cast iron flanges that were in the line where we made our line into divisions for the purpose of testing it as we went along. To avoid the leakage incident to the use of these flanges we put in a right and left handed coupling. These couplings were screwed up as ordinary right and left handed collars are done in ordinary gas fitting, but in order to do this we have to put in a short nipple for a left handed thread into the line of pipe. A rise of temperature increases the pressure of the gauge under air or gas pressure; a falling temperature diminishes the pressure of the gauge. The change of pressure to each degree of the fall or rise of a Fahrenheit thermometer would be, in round numbers, two pounds. I have measured two or three of these short nipples of joints of pipe brought in here by the defendant, as the pipe upon which they made their shop tests, for diameter. I found it to be in the center of the pipe eight inches and one-eighth, and up to the root of the thread. From there to the end of the thread it had diminished in diameter one-sixteenth of an inch. This diminution indicated compression in the pipe or permanent set, as it is called. I was present when some tests were made of the line of pipe laid under the direction of Mr. Quinn in the spring of 1891, in March, to which we have referred as the sample mile.

Thereupon counsel for the plaintiff stated that inasmuch as the court had already ruled out those tests he did not offer to make any proof thereof by this witness, which he otherwise would.

My opinion is that the heavier collar makes the better joint 613 than the standard collar, varying from twenty to twenty-five pounds, with standard line pipe. It is possible with either collar, where there is a lack of conformity between the taper of standard pipe and the collar, or lack of proper threading, to screw

the pipe in so as to compress the thread end of pipe beyond its elastic limit and thus induce a permanent set.

B. T. KENNEDY, being recalled on behalf of the plaintiff, further testified as follows:

I have computed interest taking the last date of payment that I found on the statements of 1891, and figured from that date for the expenditures in 1891, and took the last date in 1892 on which we paid out anything on that account, and figured it from that time for the expenses of 1892. A statement made out on that basis shows the total amount which the plaintiffs claim upon its figures, with interest, to be \$170,901.46.

Cross-Examination.

This does not include any credit to the Crane Company for pipe which has been delivered and was used in the line, except for the couplings that were sold.

H. P. BISHOP, recalled by the defendant, testified as follows:

The letters that I signed for the Crane Company were all about matters of which I had direct knowledge, having charge of that work, from the books in the office, from the accounts which I kept and memorandums and the business generally which went through my hands. I signed some letters Geo. L. Forman, secretary, Bishop. They were all letters that I composed. Such letters I signed in that way. My recollection is that I submitted some to him before sending them out, when he was home. All such letters I composed myself. I saw a little of this pipe which was strung through the city, down Cottage Grove avenue several miles of it. None of the letters are based on that part of the line. There is no matter contained in any of the letters pertaining to the quality or condition of this pipe in controversy that I had any knowledge of. I think the only time I ever met

Hequembourg was when I went over there for shipping di-  
614 rections and got some from him. I am a stenographer.

Those letters that I signed with my name to them were not dictated to me. The other letters were. I am a typewriter and wrote the letters in that way. Other people whose names are signed to them dictated to me and I had nothing further to do with it than mailing them.

## Cross-Examination.

At that time I was Forman's clerk and stenographer and did work for the president. I never sent out any letters that I signed by the name of Forman or Gilbert without their knowledge. Don't believe I ever sent out any letters signed Forman, Secretary, or Gilbert, Vice-President, Bishop, without their knowing the contents of those letters and approving of them. My idea is that I would not have written a letter about an important matter and signed the name of one of the general officers of the company without consulting him about it.

RICHARD T. CRANE, a witness called on behalf of the defendant, testified as follows:

Have lived in Chicago upwards of forty-two years and am president of the defendant company. I heard a good deal of the correspondence read here between my company and the different mills which furnished pipe in controversy in this case. Some of the letters are signed by me, as president. I don't think I can answer from what sources I obtained my information any better than it was something that was sort of in the atmosphere around our office, general talk I had heard around the office in regard to this subject. I never inspected personally any port or portion of the pipe in controversy except as these couplings appear around here; I have just casually. I never saw any of it except some in the fore part of the winter; it must have been in 1890, in the winter of 1890 and 1891, down south here, as I was driving out; at least what I supposed was this pipe. None of the correspondence was based on anything I observed there.

## Cross-Examination.

I have been president of this company from its organization; 615 I think since 1865 or 1866. I am also president of the Crane Elevator Company, and have been all the time. Have a different office for each company. The information on which I wrote the letters was gathered to a large extent from the same source from which I gather information in large matters on which I act as president of that company. I look after a great deal of the details of this business; I am familiar with our business almost from one end to the other, the details of it. Of course I

do not do the detail work, but I know the details are done, and I know the results of the details. I never inspect the pipe that goes out from our own shops, or inspect the pipe which is delivered. If any question arises as to the character of any pipe which I have sold I would almost universally rely upon the reports of some one else as to its inspection rather than make it myself. It is possible I got some information from Kilgore in this matter, but I do not remember.

J. C. KILGORE, being recalled on behalf of the defendant, testified as follows:

I brought all the pipe that we made the experiment with in, but there is still some pipe left there that we didn't use that came out of the same two pieces of pipe. I measured those pieces for their outside diameter. It is practically eight and five-eighths. They are a little oval; measured a little more one way than the other. As I understand it in merchant pipe a difference of an eighth of an inch in diameter is made up and equalized by a difference in the thickness of the pipe, so that the exterior diameter of this pipe is the same as the exterior diameter of standard line pipe. The outside diameter of standard line pipe is eight inches and 625-1000; 8.625, and that is what it is listed at.

The foregoing is in condensed form all the evidence offered or received on the trial of this case.

Thereupon the court charged the jury as follows:

### CHARGE TO THE JURY.

The Court: Gentlemen of the jury, certain questions of law governing this case have been settled by decisions of the Circuit

Court of Appeals. Other questions remain for this court to determine. You must settle the issues to be considered by the jury. The nature of the contract and the circumstances

involved in the controversy have made it necessary that you should hear a large amount of testimony from numerous witnesses for the purpose of reaching a determination upon the issues of fact. But those issues which you must decide by your verdict are not numerous and are quite simple as to the matters to be decided, after you reach an understanding of the rules of law which are applicable. And if I can make the instructions clear and you will keep constantly in mind the rules which are

jury. to govern your consideration of the testimony, you need find no difficulty in the way of reaching a verdict, except such as may arise, either in reconciling the testimony upon the one side and the other, or in ascertaining upon which side of the issue the testimony preponderates. That is, which furnishes the evidence most convincing to your minds as to its truth and value. It is your province, gentlemen, to weigh the evidence, not by the mere number of witnesses, or by its volume, but by your honest impressions as to the credibility of the witnesses, and the truth of the matter under the testimony as a whole. The court cannot aid you in thus measuring the evidence, but you must bear in mind this rule: Ascertain upon which side the burden of proof rests in the question under consideration, and if the testimony upon that side fails to overcome that which is opposed to it; if it is either weaker or leaves the testimony equally balanced in your minds, then there is a failure in that regard to meet this requirement of the burden of proof, and your decision upon the point must be given accordingly in favor of the other party, the one who is entitled to the benefit of the presumptions raised by the law in his favor, and against the party charged with the burden of proof.

The plaintiff, the Columbus Company, seeks in this action to recover damages for alleged defects in the make and quality of the pipe delivered by the defendant under its contract to furnish pipe for the construction of a gas line from the gas fields of Indiana to the city of Chicago. In the issue made thereupon the plaintiff assumes the burden of proof, and unless it has brought before you the more satisfactory and convincing evidence to sustain this issue, as it will be defined for your understanding, it cannot recover in this action, as it would then fail to show that the defendant was chargeable for the damages, and the fact 617 that the line, so far as made, proved defective, and that the plaintiff was clearly damaged, would not of itself authorize a verdict in favor of the plaintiff.

On the other hand, if upon the testimony as a whole you are satisfied that it preponderates in favor of the plaintiff's claim, that is, that the pipe as received upon the cars at the various railroad stations was so generally defective in thread and taper or in the weight or quality of the collars, or both, that it was incapable of meeting the requirements of the contract, and that the defects were such that they were not obvious and clearly discoverable upon reasonable inspection and delivery, but could only be ascertained reasonably and fairly by a test in line, as contemplated by the contract, and if the plaintiff has met all the



requirements which will be further explained to you to charge the defendant with liability, your finding upon this issue must be in favor of the plaintiff and against the defendant.

The fact that the defendant was not the manufacturer of the pipe, but made the purchases of the same from the mills in the capacity of agent for the plaintiff, and was only benefited by the transaction to the extent of the commission, some two and a half per cent, cannot save him from liability upon such finding, as it is the settled law of this case that the defendant, by the terms of the contract, became obligated as the seller of the pipe, and in addition to his character as agent for the plaintiff he became liable for any failure in the performance of the contract.

Gentlemen, you are instructed as to the contract in question and the obligations of the parties respectively as follows: Prior to June 28, 1890, the plaintiff, the Columbus Company, had entered into a contract with the Indiana Natural Gas & Oil Company to furnish and construct the certain pipe lines required by the latter company to pipe natural gas to Chicago. For the purpose of carrying out that undertaking the Columbus Company entered into the contract with the defendant, the Crane Company, which bears date June 28, 1890. That contract, so far as its provisions are material upon this point, I will refer to. It will be before you, and you will have an opportunity to examine it in detail. It recites that the Crane Company, for and in consideration of the facilities and representations made by it,

which are more fully shown by Exhibit A, hereto attached 618 and made a part hereof, agrees to effect for the party of the first part, the Columbus Company, upon desirable terms, the purchase of standard wrought iron line pipe hereinafter specified; that it will purchase in its own name and upon its own credit (that is, the Crane Company), as the agent irrevocably of the party of the first part (the Columbus Company), and secure the delivery to the party of the first part during the months of July, August and September, and that the first party will take all the wrought iron standard line pipe hereinafter specified in conformity with the specifications and subject to the conditions and tests made, fully set forth and specified in the contract and specifications, for the standard eight-inch line pipe hereto attached; subject, however, to change as to size and weight as hereinafter stated, and that it will do this at a price, including commissions to be paid to the party of the second part of two and one-half per cent, not exceeding ninety-one cents per lineal foot for eight-inch standard line pipe, and the prices upon the other pipe were to be in proportion.

e jury.

There is no conflict and no question in relation to the other pipe. All this controversy relates to the eight-inch wrought iron standard line pipe of which the contract provides that there shall be 260 miles, to weigh not less than 27.48 pounds per lineal foot. Then it specifies the times within which the pipe was to be delivered, and that the Columbus Company agreed to pay to the Crane Company, the party of the second part, upon delivery for each and every invoice of pipe at such delivery points as the party of the first part shall designate, spot cash therefor, including the commission of two and one-half per cent over and above the amount of each original invoice rendered the party of the second part by the manufacturer, but in no case agreeing to pay any sums in excess of, including freight, commissions or other charges, the prices hereinbefore fixed for the size of pipe.

Now, the Exhibit B referred to in that contract, and which is in evidence here before you as Exhibit B, is a blank form of a copy of contract to be used between the Crane Company 619 and the mills, and its specifications are made a part of this contract. The seventh clause of that is the only one which I deem material to specifically refer to

The seventh clause is that it will pay to the party of the 620 second part all damages and expenses of every kind which the second party shall sustain by reason of any defect or defects in the pipe delivered up to and including the time when said pipe is tested by the second party under working pressure not in excess of 1,000 pounds to the square inch, and proved tight in the line, which working test shall be made with reasonable promptness.

The first specification is also material; to furnish and deliver to the said party of the second part blank miles of eight-inch standard nominal weight line pipe made from soft iron, free from blisters and other imperfections and guaranteed to stand a working line pressure of 1,000 pounds to the square inch when proved, and tested in line, as hereinafter provided.

By this contract the Crane Company, defendant, did not become obligated, did not promise to assume or furnish the defendant a tight line under the high pressure named in the contract, as it had no part and took upon itself no obligation as to the duties of handling, caring for, screwing into line and laying the pipe after it had left the hands and care of the defendant. But it did assume and agree to furnish pipe and collars of material, strength, weight and threading which would substantially conform to the specifications of the contract, and it further agreed and promised that the pipe so furnished should be sufficient in

those particulars, when laid in line with due care and skill, to stand the pressure of 1,000 pounds gas to the square inch, and to prove tight in line when tested. It was the quality and competency of the pipe and collars to this end and test that was thus warranted by the defendant, and not a tight pipe line.

The fact that portions of the line, as laid and, sections of the pipe when screwed together, as shown by the testimony, leaked seriously when tested with air, either at the tests of September, 1890, at a pressure of 100 pounds or less, or at the later pressure of 500 pounds or more, does not prove that the pipe was faulty or insufficient as delivered, because it is incumbent on the plaintiff to furnish satisfactory evidence that it had performed with due care and skill its portion in the undertaking.

Each of these parties had a separate part in carrying out the purposes of this contract. The Crane Company was to furnish sufficient pipe and properly care for it up to the delivery at railroad stations, and there its duty terminated so far as concerns the care of the pipe. From that point the duty of the plaintiff commenced. To the end of obtaining the tight pipe line contemplated by the contract, the plaintiff was required to exercise a high degree of care commensurate with the undertaking. This duty is not imposed by the express terms of the contract, but it arose from the fact that due care must be shown in the handling and laying before the defendant can be held chargeable for any failure at the tests.

The testimony tends to show that the line covered by the contract was beyond the usual requirements in the length of line and in the high pressure called for, because of the great distance from the gas fields to the delivery point. For the purpose of charging liability upon the defendant for defects in the pipe and collars as laid, the plaintiff must be held to a degree of care on its part of like character with that imposed upon the defendant to the extent that care and skill in the handling, screwing together and laying equal in importance sufficiency of the pipe to secure a tight line.

But you are instructed, gentlemen of the jury, upon that point as to that care that the plaintiff is not called upon to exercise that extreme care and precaution which may have appeared as having been used, according to the testimony, before you in the making of shop tests. It is not required to use a degree of care which would be impracticable for the purpose of carrying on its operations in the laying of the pipe in the field within a reasonable and fair time.

It was the object originally of this undertaking to accomplish

the jury. the laying during the season of 1890. The plaintiff was required to exercise this high degree of care commensurate with the character of the line, the character of the work contemplated, and care, as I have said, commensurate with the care imposed upon the defendant in the manufacture of the pipe, but would not be called upon to exercise an extreme care which would be beyond the reasonable requirements of practical operation in the field.

You are further instructed that the provisions of the contract, as to the pipe proving tight in line, must receive a reasonable construction, both with reference to the state of the art of pipe making and of the piping of gas as known and existing at the date of the contract, and with regard to the conditions which must be met by this line owing to its length, the high pressure required and the need of economy and safety in conducting the gas to delivery points.

There is evidence tending to show that no gas line had been made which was absolutely tight at even less pressure than this contract called for. The term "tight in line," as employed in this contract, must be interpreted as reasonably tight in line, considering the objects and conditions of the undertaking and the possibilities of the art and business then existing and understood according to the evidence.

You are further instructed, gentlemen, that the question you have to consider upon the plaintiff's claim of breach of this contract, is that of the quality of the eight-inch line pipe delivered; and that issue is not affected by delays which might have occurred on the part of the plaintiff in making payment, and on the part of defendant in deliveries of pipe. So that mere failure on the part of the plaintiff to pay in accordance with the terms of the contract for the pipe delivered from time to time, does not relieve the defendant from its obligation assumed under this contract with the plaintiff in respect of the quality of the pipe already delivered. If the defendant thereafter continued to accept payment from time to time of the plaintiff, it cannot now be heard to claim that such breach on the part of the plaintiff to pay strictly in accordance with the terms of the contract relieves the defendant from its obligations as to the pipe which had been delivered.

And again, gentlemen, on the other hand, it is shown by the evidence, without substantial dispute, that about October 1, 1890, the parties agreed that further shipments of pipe should be suspended for a time and that the plaintiff never at any time thereafter called upon the defendant for the resumption of deliveries of pipe with designation of delivery points as provided in

the contract. You are, therefore, instructed that by these and other facts, shown by undisputed evidence, any delays in delivering pipe within the time specified by the contract were waived, and such delays cannot be made the basis of any damages in favor of the plaintiff, or of any defense against the defendant's 623 claim for the purchase price of pipe delivered.

Therefore, gentlemen, your first and principal inquiry must be this: Considering all the testimony which bears upon the quality of the pipe delivered, does the testimony preponderate, is the stronger and better evidence in favor of the plaintiff's contention that the pipe was so generally defective in thread, taper and collars, in weight, thread and taper when received by the plaintiff, and to such extent that the pipe and collars were incapable, as received, of making a tight line in accordance with the contract, as defined, with reasonable inspection and rejection for obvious defects on the part of the plaintiff, and with such care on the part of the plaintiff in handling and laying as was practicable, and as was called for by the definitions given.

Upon these rules, gentlemen, you should examine the testimony in this case bearing upon the question of quality of the pipe. The plaintiff has produced a large number of witnesses for the purpose of sustaining the burden which was laid upon the plaintiff of showing that the pipe was laid with due care upon its part; and you will recall that testimony, I think, when you come to look it over. It is unnecessary for me, and I will not attempt to recapitulate it to you, except to state generally that its tendency appears to be, to show that there was care exercised on the part of the men employed to handle the pipe with care, to take it to the fields with care, to screw it together in accordance with the accepted methods; and you should first examine that testimony to ascertain whether by itself it is satisfactory to your minds of exercise of the care, called for to lay a pipe line which should stand the test called for by this contract.

It is not sufficient for the plaintiff to show that it had complied simply with ordinary rules, if you find from the testimony as a whole that there was a higher degree of care required on its part. It is apparent from the testimony that the preservation of the threads upon the pipe and collars, especially upon the pipe, which are exposed, is of great importance in screwing a tight line. It is clearly incumbent on the plaintiff to show that in unloading that pipe from the cars it exercised such care as you shall find from all the testimony was necessary in order to preserve those threads intact.

Examine the plaintiff's testimony in the first place and ascer-

jury. 624 tain whether such care appears in the unloading from the cars. Then in carrying the pipe to the fields it was necessary that it should be also, under the testimony, handled with care, to still preserve the threads from injury. Ascertain whether the plaintiff has shown upon its part an exercise of such care as was essential to the preservation of the pipe. When the pipe reached the fields the plaintiff has detailed in the testimony the manner in which it was laid. For the laying at Deep River the pipe was strung, before the ditch was dug, upon the ground, screwed together there, and remained for some days, during what is claimed by the defendant's testimony to have been quite warm weather, and it is claimed by the defendant that it was subject to much strain by reason of being screwed together upon the ground, and left to remain there for some little time before placing it in the ditch. I think the testimony shows that it remained upon the ground for the purposes of the first test. Then the testimony as to the manner in which it was screwed together, that a portion of it was done by use of machines, and a portion of it by hand and the use of tongs. You will recall all of that testimony.

It is claimed on the part of the defense that that testimony itself discloses that there were faults in the screwing together of the pipe, by which it was liable to at least become cross-threaded, and by which it would not be sent up to a proper set with that degree of accuracy which was essential to preserve a tight line under the requirements of this contract. If the testimony of the plaintiff in those particulars fails to satisfy you upon that side, that there was an exercise of the degree of care which had been defined to you, then the plaintiff cannot recover damages in this action as for defect in the quality of the pipe, because the failure of care in those regards is so manifestly a cause of some failure in the line to meet the required tests, that it would be impossible for you to divide the responsibility.

On the other hand, the testimony of the defendant has been introduced, taking the pipe at the mill, showing the manner in which it was made from the time it came into the threading department, and all the way through to the delivery upon the cars.

That testimony tends to show the exercise of the utmost care 625 in the manufacture of the pipe. That alone is not sufficient.

That is important testimony for you to consider. The pipe was delivered upon the cars, was carried, and the defendant was responsible for it up to the delivery at the stations. That is, it was to carry the pipe upon the cars to the delivery points named by the plaintiff for receiving the pipe. If it came to those points in a proper condition to meet the requirements of this contract, of



course the defendant had discharged its liability fully. You should examine and consider carefully all this testimony as to the manufacture of the pipe, to ascertain whether that has shown a clear compliance with the requirements in that regard, including the test which is shown by each of the mills to a thousand pounds by water, which would be a test clearly of structural strength, and to some extent would be a test of the threading. Just how far it would answer for the purpose of showing the closeness of the threading, the intimacy of the union, you will have to determine from all of the testimony.

After the pipe reached the stations, the defendant has introduced a large number of witnesses who have testified as to the manner in which the pipe was taken from the cars to be piled on to the ground, before carrying it to the field. There is much conflict in the testimony in this regard as offered by the plaintiff and as offered by the defendant. You will have to consider it as a whole and in detail determine where the better testimony is. If you are satisfied from the testimony as a whole that there was carelessness, a want of care for the pipe in taking it from the cars to the ground, and that injury resulted to the threading of the pipe from that cause to a considerable extent, so that it would affect the pipe and the ability of the pipe to make a tight line, then, gentlemen, the plaintiff must fail in that regard to attribute the failure of the pipe to make a tight line as chargeable to the defendant, in so far that neglect can be seen by you to be operative in accounting for the leakage of the portion of the line which was tested, and the defects found in the inspection which will be referred to later, of the pipe after it had been all delivered. The pipe was carried from these stations to the fields, and much testimony has been introduced by the defendant to show a want of care in the handling; that in throwing the pipe off from the wagons one piece was allowed to strike upon the other, and that  
626 instead of being lifted off with care it was thrown off with disregard to the preservation of those threads. If you find neglect in that regard on the part of the plaintiff which must necessarily have contributed to injury of this pipe and prevented it from making a tight line, that is not chargeable to the defendant, but to the plaintiff

In screwing the pipe together there has been considerable testimony introduced by the defendant tending to show some neglect in that regard. For instance, some testimony has been introduced that when a bend was required to be made in the pipe, instead of using heat and fire to make the bend so that the pipe should come down gradually to it, that they bent it cold, as the expres-



the jury. sion is used, by men getting on each end of it and bearing down either by their weight or with the use of tongs; and it is claimed on the part of the defendant, and witnesses have testified that that would subject the threading of the pipe and collars at this place of union to a severe strain, and would be liable to produce a leak. You must determine, gentlemen, from all of the testimony whether the neglects in the manner of screwing together and laying were of such nature that they would fairly and reasonably account for the leaky quality of the portion of the line which was tested, which was put together and tested, and for a large portion of the defects which were found by the inspectors in the pipe as examined in November—December. I think it was of 1890.

I have referred to the direct testimony in this regard. It is for you to determine where the truth is, what the credible testimony in that behalf is, bearing in mind that the burden of proof is upon the plaintiff.

There is other testimony which has been introduced here and properly received. The tests, first, are a proper matter for your consideration. Of course the test which was made in September of the Deep River pipe shows by the undisputed testimony that there were a large number of leaks developed in the portion of the pipe, some twelve miles, I think it was, which had been screwed together. The number of those leaks has been detailed to you by the plaintiff's witnesses. It was the right of the plaintiff under this contract to have a test made, and to have a test made which would ascertain whether the line was reasonably tight or not. All

627 tlemen, that that was the proper medium to use for that purpose as the nearest approach which could practically be found for a test of its capacity for carrying gas. The line was intended to carry gas, and the testimony all shows that gas is of less specific gravity than air. Therefore air would be a fair test, so far as the defendant is concerned, for the purposes of this contract. The first test of September was made with air under one hundred pounds, because that was the highest capacity their pump could furnish at that time. It showed a large number of leaks, as has been detailed by the testimony. You must ascertain, gentlemen, whether those leaks are accounted for in the failure on the part of the plaintiff in caring for, handling and laying the pipe. If they are there can be no recovery against the defendant for that ground. The subsequent tests which were made after the pumps came in, by which they could raise the pressure, are to be taken into consideration for the same purpose and in the same view.

In addition to the direct testimony letters written by the de-

fendant, the Crane Company, to the mills respecting the pipe have been admitted in evidence for such consideration as you may find them entitled to under the instructions which you must observe in that regard. The letters were written by Mr. Crane, by Mr. Gilbert, by Mr. Forman and one by Mr. Murphy, I think, representatives of the Crane Company, each to those different mills who had furnished the pipe. The only grounds upon which testimony of that kind can be received as evidence of the fact as to the quality and character of the pipe is by way of admissions on the part of the defendant of the fact; and the law has permitted them to be used for that purpose upon the ground, as I think it is universally stated—at least it is generally so stated, upon the theory that they are admissions or declarations made by the party contrary to his own interest in reference to the subject-matter of the suit, and under circumstances which render it probable that the party so writing would not have made such admissions or declarations if they had not been true. The weight and value to be attached to such evidence depends altogether upon the circumstances under which the letters were written. A deliberate admission by a party to the suit made with full knowledge of all the circumstances, and at a time and under conditions which make it improbable that he would have made the statement had it  
628 not been true, may be entitled to considerable weight; while a statement made by one who has no personal knowledge of the subject-matter and who writes or speaks without careful inquiry, without the intention to make a deliberate statement of fact, is entitled to little or no weight.

In his case there is evidence tending to show that neither Mr. Crane, the president of the defendant company, nor Mr. Gilbert, the vice-president, ever examined any of the pipe in question. In fact, I think each of them said that they never did examine any of the pipe in question, except Mr. Crane stated that he saw some of the pipe casually which was put down here in Chicago, and which is not strictly in controversy here, except as it forms a part of the whole lot of pipe. Mr. Forman, the secretary, who wrote a considerable number of the letters. I think, appears to have only seen the pipe, at least so far as the testimony shows, when he was down there on one occasion with Mr. Kilgore when this test of September was made, and did then see the pipe which was under that test and see the test, a portion of it, at any rate, as made at that time. But otherwise there is no testimony in the case showing that Mr. Forman had personally inspected or looked over the pipe which had been delivered, and it further appears by the testimony that Mr. Forman was not a practical pipe maker, but more especially an office man.

the jury.

It further appears in the evidence, and by the contract itself, that the Crane Company was designated as the agent of the plaintiff company, to a certain extent, in making these purchases. Although the Crane Company is charged with an additional responsibility, it was still, to a certain extent, an agent for the Columbus Company, and in the letters repeatedly, or certainly in one of the most important of the letters which has been referred to here as written by Mr. Crane, he refers in writing to the mill people to the fact that he writes as a representative of the Columbus Company. Now, in so far as those statements must be attributable to his exercise of the obligation which he may have felt at that time that he was owing to the Columbus Company as an agent, and in so far as the representations were made in that capacity alone, and not as positive statements of existing facts, stated of his own knowledge or as of information which had come to him, upon which he relied as though it were his knowledge, the 629 statement in those letters are not to be considered as evidence of the fact of the quality of this pipe. It is only so far as you find from the letters that they are intended as a deliberate statement of facts that they should be considered as evidence at all of the character and quality of this pipe.

It was clearly understood at the making of this contract—I think the evidence clearly shows, at least it tends to show—that the Crane Company were not dealt with as the manufacturers of the pipe. It was understood by the parties that they were to make the purchases of the pipe from the mills. And so far as the Crane Company were representing the claims to them made by the Columbus Company, through those letters and information coming to them as representatives of the Columbus Company, they are not to be considered as proof of existing facts. But you must look to the proper legitimate evidence in the case to ascertain what the fact is.

And while upon that point, gentlemen, I will mention the letters which were admitted coming from the mills to the Crane Company. Those letters are not to be considered by you as proof of the facts at all in respect to the make and quality of this pipe. They are pure hearsay, and not entitled to consideration as evidence of the fact. They are simply admitted in evidence here for your consideration, so far as they may be explanatory of the letters introduced on the part of the plaintiff written by the Crane Company to the mills, and not as independent evidence of any facts which may appear to have been stated in them.

Gentlemen, with reference to the tests, you will remember that the contract called for a test in line at a thousand pounds. You

are further instructed in that regard—it appears from the evidence that the pipe contracted for was intended for the construction of a natural gas pipe line from Greentown, Indiana, to the boundary line between the States of Indiana and Illinois, a distance of about one hundred and sixteen miles, and that the pipe actually delivered, with a change of collars, was used by the plaintiff in the partial construction of said line.

It further appears that a statute of the State of Indiana, enacted March 4, 1891, provided in substance that where natural gas is to be transported through wrought iron pipes or casings such pipe lines should be subjected to a test of at least 400 pounds to the square inch, and that the transportation of such gas through such pipe at a pressure exceeding 300 pounds to the square inch was prohibited, as well as the transportation of gas through such lines at any pressure exceeding the natural pressure of the gas flowing from the wells.

It further appears from the evidence that the Columbus Company and the Indiana Natural Gas and Oil Company were parties to a litigation to determine the constitutionality of this law, and in 1891 the Supreme Court of the State of Indiana held said law to be constitutional and valid. It further appears from the evidence that about the 7th day of July, 1891, said Columbus Company and the Indiana Natural Gas and Oil Company voluntarily modified their agreement for the construction of the pipe line in question so as to reduce the test pressure required upon said line to 400 pounds to the square inch, with a loss of not more than 10 per cent., and so as to reduce the working pressure to be employed on said line to 300 pounds to the square inch. Now, in that regard the plaintiff would not be justified in putting an expense into its work of redeeming its line from its alleged fault, or, rather, in repairing and putting the new collars upon the pipe or otherwise to establish the line, making expense to establish the line to carry up to a pressure of one thousand pounds, which it was not required to have in fact, and which was prohibited by law, from engaging in a transportation of gas at such a pressure. Nevertheless, although that law limited the amount of pressure which would be permitted in Indiana to 300 pounds of working pressure, you are instructed, gentlemen, that in laying this line it was not only the right but the duty of the plaintiff to test it when laid up to such pressure over and above the actual working pressure liable to be put upon it as would absolutely demonstrate, in so far as such test could accomplish this result, its capacity to prove tight under such working pressure as it was likely to be subjected to, and in making such preliminary tests to put on the

ury. pressure to such an amount in excess of the working pressure to be put on the line as should operate as a reasonable factor of safety in view of the inconvenience, risk and danger attendant upon the maintenance and operation of a leaky gas line at high pressure, running through a populous region of country, such as was traversed by this pipe.

So that although the plaintiff would not be authorized to incur an unnecessary expense, an expense in putting in provisions beyond the amount which would be reasonably necessary for 631 that purpose, that is, to reach an arbitrary sum, it would still be authorized to make its tests and make provision which should give it a reasonable and proper factor of safety over and above the amount of pressure which would be permitted under that statute. But if the jury believe that after the commencement of this case the plaintiff unreasonably and unnecessarily expended money in the purchase of new couplers and exchanged new couplers for the old for the alleged purpose of constructing a line which would stand a pressure of one thousand pounds to the square inch without regard to this question of the simple factor of safety, then the court instructs you that you should not find for the plaintiff as damages the sum of money so expended for that purpose.

Gentlemen, if on the review and examination of this testimony you shall be satisfied that the plaintiff has failed to make out the case which has been pointed out, by the preponderance of the testimony, of showing that the defects in the pipe were due to faults in the mill, with which the defendant is chargeable, if he has failed in that, then you cannot of course find in favor of the plaintiff upon the issues made by him.

If, on the other hand, you are satisfied with the testimony that the plaintiff shows that the defects in the pipe were due to the failure in the manufacture or failure on the part of the defendant, then you would have to consider the question of the damages to which he is entitled.

Before speaking of that, gentlemen, I must refer to one other item of evidence in this case, and that is the inspection by Coyle and Hoskins. After differences arose between the Crane Company and the Columbus Company, after the tests were made in September, and there were discussions and differences between the parties, it was agreed between the Crane Company and the Columbus Company in some way that there should be an examination of the pipe which remained on the ground and not laid in line, by two inspectors who were named, Coyle being appointed by one side and Hoskins by the other, to ascertain the condition

of the pipe as it then was. The report of the inspectors has been introduced in evidence and is before you for consideration to ascertain the actual condition of the pipe so far as that may enable you to ascertain it. You will have to bear in mind the 632 testimony in that regard that Hoskins says that after the first test under the instructions of Kilgore he gave in to Coyle, the representative of the Columbus Company, entirely, upon what should be considered defects, what should be marked as defects on this pipe, and he claims it was exclusively from that time the judgment of Coyle in naming them. You are to consider all of the testimony and examine these inspection reports and apply them, so far as they will give you aid in reaching a determination upon this question as to the quality of the pipe as originally delivered.

You will bear in mind, gentlemen, that defects here and there in the pipe cannot be recovered for in this action. The plaintiff sues upon a total failure of the pipe. He cannot recover, in this action at any rate, for defects which may have existed here and there in the pipe. It must be a failure, which extends, as I have explained to you, through the whole lot of pipe so as to make it insufficient for the purposes of that line. And you will then consider the testimony of the inspectors in that view and for that purpose.

You are further instructed, gentlemen, that the evidence tends to show that the relations between the Crane Company and the manufacturing mills were such that in many, if not in all cases, the Crane Company would have had the right to require said mills to repair and make good any defect or infirmity in the pipe furnished by them, respectively, if such defects or infirmities had been discovered, and been made known to the mills with reasonable promptness.

The evidence also tends to show that the Columbus Company knew that the Crane Company was not manufacturing any of the pipe in question, but was procuring it from other manufacturers. It was, therefore, the duty of the Columbus Company, in good faith to the Crane Company, to discover and make known to the Crane Company with reasonable promptness all such defects and infirmities in the pipe as could have been discovered by reasonably careful inspection: the defects, if any, which could have been discovered by such inspection, but which the Columbus Company did not discover within a reasonable time, or which having discovered, it did not make known to the Crane Company within a reasonable time, must be held to have been waived.

When the pipe arrived on the cars at the delivery points it was



the duty of the Columbus Company to give it reasonably  
633 careful inspection, and to discover such defects, if any, as  
were obvious, and would have been found upon such reasonably careful inspection. If, upon such inspection, any of the pipe, including collars, was discovered to be defective or damaged, so as to make it probable that such pipe when laid would not make a tight line, then it was not only the right of the Columbus Company to reject such damaged or defective pipe, but it was the duty of the Columbus Company towards the Crane Company to refrain from laying such pipe in line. The Crane Company would have the right upon such rejection to have a reasonable time to substitute other pipe for any which might be found to be damaged or defective on such inspection, and the Columbus Company could not put the Crane Company in default under the contract, after receiving and laying pipe which it ought to have rejected, that is, where the defect was so obvious that it would be apparent upon a reasonably fair inspection by the plaintiff when receiving it.

If you find in favor of the plaintiff upon the issues as stated to you, that the fault was the fault of the defendant, then the plaintiff is entitled to recover such damages as were reasonably incurred by reason of such defects.

The plaintiff has submitted in evidence, which will be taken up by you, a statement showing what is claimed by them to be their damages in that regard, of which there is a summary also accompanying their statement, showing the various items which they claim to have expended in the effort to make the line, so far as they could make it, what it should have been under the terms of the contract. It is unnecessary for me to go through it, so much for screwing pipe, so much for hauling and threading and bridging, and a large number of items which are given and summarized in detail in their statement, and those expenditures are claimed by it to be shown from the field reports, which have been introduced in evidence, and the accompanying vouchers and the testimony of Coyle, and perhaps another witness, and all computed by Mr. Kennedy, who testified here.

You are instructed in that regard, gentlemen, that the plaintiff, for the purpose of showing the amount of money which it claims to have expended in repairing and making good the pipe delivered by the defendant under the contract, has introduced in  
634 evidence certain statements prepared by the witness Kennedy, so based, as Mr. Kennedy testifies, not upon any personal knowledge of the persons preparing them, but upon certain documents in the possession of the plaintiff, and especially a large



number of vouchers and so-called field reports which are offered in evidence. Certain of the field reports were identified by the witness Coyle as bearing his signature, and as being correct, as I recall the testimony, while there are some that are not identified or authenticated by any witness.

There is also evidence tending to show that some of these field reports contain charges for work which had no reference to the repairing of the Crane pipe, and which could not, under any circumstances, be a proper charge against the Crane Company. It is the duty of the plaintiff, if it is entitled to damages, to furnish evidence which will enable the jury to decide with reasonable certainty, and not by mere guess or speculation what items are properly chargeable against the defendant. If the plaintiff has not furnished such evidence the jury is not at liberty to supply the lack of it by conjectures or compromise or the exercise of the personal judgment of the jurors. If any of the items claimed for damages are intermingled with other items not chargeable, and to such an extent that the jury are unable to ascertain from the legitimate evidence what are the expenditures properly chargeable to this cause, there can be no allowance for damages for those amounts.

But if you are able—the testimony of Mr. Kennedy is simply a compilation made from the field reports; it is not original testimony; testimony intended to aid you. If, with the aid of the field reports, so far as they have been authenticated by witnesses, you are able to clearly determine the items of damage, you are entitled to consider them for that purpose. These are the items running from the screwing of the pipe down to the lumber for the bridge, the various items comprising the preliminary figures as given by the plaintiff in its statement.

Then the plaintiff has items for couplings, the new couplings which were supplied by it for the purpose of taking the place of the old couplings, as furnished by the Crane Company, of which the items are given here as the alleged expense for the purchase of these couplings.

Now, gentlemen, you are instructed in that regard that if 635 these couplings were unnecessarily expensive, if the collars as furnished by the Crane Company were sufficient in weight to answer the purpose of this contract, and if there was no fault in respect to weight, if you are so satisfied from the evidence the plaintiff was not authorized to incur the additional expense for these heavier couplings, made by the difference in the weight, if you find there was no fault in the couplings as furnished by the mills for the Crane Company, that they were only defective in the matter of threading and not in weight, then it was the duty

of the plaintiff to repair them if they could be repaired. If they could not be repaired, then they should be supplied with new couplings of that character. The plaintiff would not be authorized to substitute the far heavier and more expensive couplings provided by Mr. Hequembourg's plan, which has been called the Hequembourg coupling here, unless you find that was reasonably necessary for the purpose of supplying the defect and making the line tight.

You are instructed, gentlemen, that the contract contemplated and provided for the construction of a line with screw joints, and not with lead joints. The specifications do not call for any particular form of recess or other provision for lead calking, and a diversity or an absence of such recess or other provision does not of itself constitute a breach of the contract, unless you believe from the evidence that in the state of the art of pipe making, as it existed when the pipe was made for delivery under this contract, a provision for lead calking was customary or reasonably necessary as incidental to the making of a screw joint. In respect to the dove-tail recess contained in the heavier collar subsequently used, there is evidence tending to show that the use of lead in such a recess is not a mere incident to the use of a screw joint, but is in substance a separate and additional joint, independent of the screw. If you believe this to be true then it was no part of the duty of the Crane Company under its contract to furnish its collars with such dove-tail recess for lead calking. The item for threading machines, \$3,883.46, would be a legitimate item, if you find in favor of the plaintiff upon this issue, for an allowance to the extent that the threading was made necessary for the purpose of curing defects in the pipe which existed by the fault of the  
636 defendant and the mill; not otherwise; simply for the purpose of curing any faults which may have arisen by improper use of the pipe or improper handling of the pipe.

And so in regard to the other items contained here, so far as you find they are sustained by the testimony, if you find the plaintiff is entitled to recover, he is entitled to an allowance for such amount as he shows he necessarily expended, because of breaches on the part of the defendant, and for interest. You should deduct from that amount—he has made a deduction here for the amount of old couplings sold. If you find the amount realized for that was a fair and reasonable amount, then that should be the total of the credit for that account. He further used the pipe furnished by the Crane Company, and to the extent that that pipe was of value, and for the reasonable and fair value of that pipe, even though it did not conform to the contract, the defend-

ant would be entitled to an allowance, a deduction, to the extent that it was in excess of the amount which had been paid theretofore by the plaintiff upon the contract. Ch

If you find, gentlemen, that the plaintiff is not entitled to recover, and that there is no showing of such breach as would entitle it to a recovery in this case, then you must proceed to a consideration of the defendant's claim in this case. The defendant shows there was owing upon the account to it, at the time the plaintiff ceased to take any more of the pipe, \$72,843.43. If the pipe was such as called for by the contract, then the defendant is entitled to recover that full amount against the plaintiff, with interest, which has been computed in accordance with the statute of Illinois, and is stated here. It is unnecessary for me to refer to the details. If you find further that the pipe was in accordance with the contract, and if you believe from the evidence that the Crane Company was able, ready and willing at and after the 12th day of February, 1891, to furnish and deliver within a reasonable time, after receiving a demand for delivery, and designation of delivery points, the balance of the pipe called for by its contract with the Columbus Company, and of the quality and character substantially in accordance with that contract, and that the Columbus Company on the 12th of February, notified the Crane Company that it would not receive further deliveries of pipe under the contract, then the Crane Company is entitled to receive a commission of two and one-half per cent. upon the undelivered pipe at the contract price. That has been computed, 637 and is stated in the statement furnished by the defendant at \$18,776 and some cents, and they would be also entitled to interest on that amount.

There is further evidence tending to show that the Pittsburg Tube Company had purchased material for the manufacture of a considerable quantity of pipe to be delivered under the contract in question, and had manufactured some such pipe, which pipe and material it was obliged to sell, and did sell, at a loss, by reason of the refusal of the Columbus Company to receive further deliveries of the pipe. If you believe that the pipe previously delivered was in substantial accordance with the contract—that is, previously delivered by the Crane Company—was in substantial accordance with the contract, or if you believe that the refusal of the Columbus Company to receive further deliveries of pipe was wrongful, under the instructions of the court, then the Crane Company is entitled to recover in this suit the reasonable amount of the loss shown by the evidence to have been sustained by the Pittsburg Tube Company, and to have been paid to that com-

pany by the Crane Company, with interest thereon from date of payment. That amount is also stated.

You, gentlemen, are the judges of the credibility of witnesses. If you believe any witness has wilfully testified falsely to any material matter, you are at liberty to disregard his entire testimony, except so far as corroborated by other credible evidence. The testimony has occupied a good many weeks, and I think perhaps necessarily occupied a great deal of time by reason of the questions involved and the extensive territory covered by the controversy. It is very desirable, very important, that you should endeavor to reach a conclusion in this matter. I hope you will succeed in doing so. If you are at any time in further need of instructions upon a question of law, have not fully understood it in that regard, it would be your right and it would be my pleasure to state to you upon any question of law; but bear in mind, upon the questions of fact you must determine them for yourselves entirely. Upon any question of law, if I have not made the instructions sufficiently clear for your comprehension, you may call at any time upon me, and I shall be here ready to give them, by sending out word to the parties. I hope that they have been made so clear that it will be unnecessary for you to do that, and that you will be able out of an application of the rules of law in this case to reach a just conclusion.

638 You have nothing to do with any question of sympathy for one party or the other. The fact that the plaintiff has been unfortunate in the venture, in so far as being called upon to make a large expenditure, outside of the contract, is not to be considered by you for one moment as entitling the plaintiff to recover here, unless it has established a cause of action such as I have defined to you. It must be established by a preponderance of the evidence.

On the other hand, the fact that the Crane Company appear only to have had an interest in this matter to the extent of their two and a half per cent. commission, that they were not the real parties who manufactured and made the pipe, does not entitle them to any consideration on that account. They should be held liable just as much, if they are liable under the rules stated, as they were themselves the manufacturers of the pipe.

I believe that covers the instructions. I believe, gentlemen, that is all the instruction that will be necessary, and you may retire. In reference to the exhibits, the papers and all the smaller exhibits will be taken to your room for you to have them there. If you desire at any time to examine these irons, or any of the other exhibits, they will be left here in the room, and you can

come down with the bailiff together at any time and examine. You will have to examine them together, if you desire to do so, but it is not necessary to encumber your room with them. They will be left here and you can come and look at them, if you desire; and such arrangement will be made for your future as will be necessary. I shall remain here for some time. If you agree upon a verdict I shall be ready to receive it.

Thereupon the plaintiff, by its counsel, then and there duly excepted to that portion of the foregoing charge of the court to the jury which is as follows:

"The plaintiff, the Columbus Company, seeks in this action to recover damages for the alleged defects in the make and quality of the pipe delivered by the defendant under its contract to furnish pipe for the construction of a gas line from the gas fields of 639 Indiana to the City of Chicago. In the issue made thereupon the plaintiff assumes the burden of proof, and unless it has brought before you the more satisfactory and convincing evidence to sustain this issue, as it will be defined for your understanding, it cannot recover in this action, as it would then fail to show that the defendant was chargeable for the damages, and the fact that the line, so far as made, proved defective, and that the plaintiff was clearly damaged, would not of itself authorize a verdict in favor of the plaintiff."

Thereupon the plaintiff, by its counsel, also then and there duly excepted to that portion of the foregoing charge of the court to the jury which is as follows:

"On the other hand, if upon the testimony as a whole you are satisfied that it preponderates in favor of the plaintiff's claim; that is, that the pipe as received upon the cars at the various railroad stations was so generally defective in thread and taper or in the weight or quality of the collars, or both, that it was incapable of meeting the requirements of the contract, and that the defects were such that they were not obvious and clearly discoverable upon reasonable inspection, and delivery, but could be only ascertained reasonably and fairly by a test in line, as contemplated by the contract, and if the plaintiff has met all the requirements which will be further explained to you to charge the defendant with liability, your finding upon this issue must be in favor of the plaintiff and against the defendant."

Thereupon the plaintiff, by its counsel, also then and there duly excepted to that portion of the foregoing charge of the court to the jury which is as follows:

"By this contract the Crane Company, defendant, did not become obligated, did not promise or assume to furnish the defend-

ant a tight line under the high pressure named in the contract, as it had no part and took upon itself no obligations as to the duties of handling, caring for, screwing into line and laying the pipe after it had left the hands and care of the defendant. But it did assume and agree to furnish pipe and collars of material, strength, weight and threading which would substantially conform to the specifications of the contract, and it further agreed and promised that the pipe so furnished should be sufficient  
640 in those particulars, when laid in line with due care and skill, to stand the pressure of one thousand pounds gas to the square inch, and to prove tight in line when tested. It was the quality and competency of the pipe and collars to this end and test that was thus warranted by the defendant, and not a tight pipe line."

Thereupon the plaintiff, by its counsel, also then and there duly excepted to that part of the foregoing charge of the court to the jury which is as follows:

"The fact that portions of the line as laid and sections of the pipe when screwed together, as shown by the testimony, leaked seriously when tested with air, either at the tests of September, 1890, at a pressure of one hundred pounds or less, or at the later pressure of five hundred pounds or more, does not prove that the pipe was faulty or insufficient as delivered, because it is incumbent on the plaintiff to furnish satisfactory evidence that it had performed with due care and skill its portion in the undertaking."

Thereupon the plaintiff, by its counsel, also then and there duly excepted to that portion of the foregoing charge of the court to the jury which is as follows:

"The testimony tends to show that the line covered by the contract was beyond the usual requirement in the length of line and in the high pressure called for, because of the great distance from the gas fields to the delivery points. For the purpose of charging liability upon the defendant for defects in the pipe and collars as laid, the plaintiff must be held to a degree of care on its part of like character with that imposed upon the defendant to the extent that care and skill in the handling, screwing together and laying equal in importance sufficiency of the pipe to secure a tight line."

Thereupon the plaintiff, by its counsel, also then and there duly excepted to that portion of the foregoing charge of the court to the jury which is as follows:

"It was the object originally of this undertaking to accomplish the laying during the season of 1890. The plaintiff was required



to exercise this high degree of care commensurate with the  
641 character of the line, the character of the work contemplated,  
and care, as I have said, commensurate with the care imposed  
upon the defendant in the manufacturing of the pipe; but would  
not be called upon to exercise an extreme care which would be  
beyond the reasonable requirements of practical operation in the  
field."

Thereupon the plaintiff, by its counsel, also then and there duly  
excepted to that portion of the foregoing charge of the court to  
the jury which is as follows:

"You are further instructed that the provisions of the contract,  
as to the pipe proving tight in line, must receive a reasonable  
construction, both with reference to the state of the art of pipe  
making, and of the piping of gas as known and existing at the  
date of the contract, and with regard to the conditions which  
must be met by this line owing to its length, the high pressure  
required and the need of economy and safety in conducting the  
gas to delivery points.

"There is evidence tending to show that no gas line had been  
made which was absolutely tight at even less pressure than this  
contract called for. The term, 'tight in line,' as employed in this  
contract, must be interpreted as reasonably tight in line, consid-  
ering the objects and conditions of the undertaking and the possi-  
bilities of the art and business as then existing and understood  
according to the evidence."

Thereupon the plaintiff, by its counsel, also then and there duly  
excepted to that portion of the foregoing charge of the court to  
the jury which is as follows:

"Therefore, gentlemen, your first and principal enquiry must  
be this: Considering all the testimony which bears upon the  
quality of pipe delivered, does the testimony preponderate, is the  
stronger and better evidence in favor of the plaintiff's contention  
that the pipe was so generally defective in thread, taper and col-  
lars, in weight, thread and taper when received by the plaintiff,  
and to such extent that the pipe and collars were incapable, as  
received, of making a tight line in accordance with the contract,  
as defined, with reasonable inspection and rejection for obvious  
defects on the part of the plaintiff, and with such care on the  
642 part of the plaintiff in handling and laying as was practicable,  
and as was called for by the definitions given."

Thereupon the plaintiff, by its counsel, also then and there duly



excepted to that portion of the foregoing charge of the court to the jury which is as follows:

"It is claimed on the part of the defense that that testimony itself discloses that there were faults in the screwing together of the pipe, by which it was liable to at least become cross-threaded, and by which it would not be sent up to a proper set with that degree of accuracy which was essential to preserve a tight line under the requirements of this contract. If the testimony of the plaintiff in those particulars fails to satisfy you upon that side, that there was an exercise of the degree of care which has been defined to you, then the plaintiff cannot recover damages in this action as for defect in the quality of the pipe, because the failure of care in those regards is so manifestly a cause of some failure in the line to meet the required tests that it would be impossible for you to divide the responsibility."

Thereupon the plaintiff, by its counsel, also then and there duly excepted to that portion of the foregoing charge of the court to the jury which is as follows:

"In screwing the pipe together there has been considerable testimony introduced by the defendant tending to show some neglect in that regard. For instance, some testimony has been introduced that when a bend was required to be made in the pipe, instead of using heat and fire to make the bend so that the pipe should come gradually down to it, that they bent it cold, as the expression is used, by men getting on each end of it and bearing down either by their weight or with the use of tongs; and it 643 is claimed on the part of the defendant, and witnesses have testified, that that would subject the threading of the pipe and collars at this place of union to a severe strain, and would be liable to produce a leak. You must determine, gentlemen, from all of the testimony whether the neglects in the manner of screwing together and laying were of such a nature that they could fairly and reasonably account for the leaky quality of the portion of the line which was tested, which was put together and 644 tested, and for a large portion of the defects, which were found by the inspectors in the pipe as examined in November—December, I think it was, of 1890."

Thereupon the plaintiff, by its counsel, also then and there duly excepted to that portion of the foregoing charge of the court to the jury which is as follows:

"It further appears in the evidence, and by the contract itself, that the Crane Company was designated as the agent of the plaintiff company, to a certain extent, in making these purchases. Although the Crane Company is charged with an additional re-

sponsibility, it was still, to a certain extent, an agent for the Columbus Company, and in the letters repeatedly, or certainly in one of the most important of the letters which has been referred to here as written by Mr. Crane, he refers in writing to the mill people to the fact that he writes as a representative of the Columbus Company. Now, in so far as those statements must be attributable to his exercise of the obligation which he may have felt at that time that he was owing to the Columbus Company as an agent, and in so far as the representations were made in that capacity alone, and not as positive statements of existing facts, stated of his own knowledge or as of information which had come to him, upon which he relied as though it were his knowledge, the statements in those letters are not to be considered as evidence of the fact of the quality of this pipe. It is only so far as you find from the letters that they are intended as a deliberate statement of facts that they should be considered as evidence at all of the character and quality of this pipe."

Thereupon the plaintiff, by its counsel, also then and there duly excepted to that portion of the foregoing charge of the court to the jury which is as follows:

"It was clearly understood at the making of this contract—I think the evidence clearly shows—at least it tends to show, that the Crane Company were not dealt with as the manufacturers of the pipe. It was understood by the parties that they were to make the purchases of the pipe from the mills. And so far as the Crane Company were representing the claims to them made by the Columbus Company, through these letters, and information coming to them as representatives of the Columbus Company, they are not to be considered as proof of existing facts.  
645 But you must look to the proper, legitimate evidence in the case to ascertain what the fact is."

Thereupon the plaintiff, by its counsel, also then and there duly excepted to that portion of the charge of the court to the jury which is as follows:

"Gentlemen, with reference to the tests, you will remember that the contract called for a test in line at a thousand pounds. You are further instructed in that regard—it appears from the evidence that the pipe contracted for was intended for the construction of a natural gas pipe line from Greentown, Indiana, to the boundary line between the States of Indiana and Illinois, a distance of about a hundred and sixteen miles, and that the pipe actually delivered, with a change of collars, was used by the plaintiff in the partial construction of said line.

"It further appears that a statute of the State of Indiana, en-

acted March 4, 1891, provided in substance that where natural gas is to be transported through wrought iron pipes or casings such pipe lines should be subjected to a test of at least 400 pounds to the square inch, and that the transportation of such gas through such pipe at a pressure exceeding 300 pounds to the square inch was prohibited, as well as the transportation of gas through such lines at any pressure exceeding the natural pressure of the gas flowing from the wells.

"It further appears from the evidence that the Columbus Company and the Indiana Natural Gas and Oil Company were parties to a litigation to determine the constitutionality of this law, and in 1891 the Supreme Court of the State of Indiana held said law to be constitutional and valid. It further appears from the evidence that about the 7th day of July, 1891, said Columbus Company and the Indiana Natural Gas and Oil Company voluntarily modified their agreement for the construction of the pipe line in question so as to reduce the test pressure required upon said line to 400 pounds to the square inch, with a loss of not more than 10 per cent., and so as to reduce the working pressure to be employed on said line to 300 pounds to the square inch. Now, in that regard the plaintiff would not be justified in putting an expense into its work of redeeming its line from its alleged fault, 646 or, rather, in requiring and putting the new collars upon the pipe or otherwise to establish the line, making expense to establish the line to carry up to a pressure of one thousand pounds, which it was not required to have in fact, and which was prohibited by law, from engaging in the transportation of gas at such a pressure."

Thereupon the plaintiff, by its counsel, also then and there accepted to that portion of the foregoing charge of the court to the jury which is as follows:

"So that although the plaintiff would not be authorized to incur any unnecessary expense, and expense in putting in provisions beyond the amount which would be reasonably necessary for that purpose, that is, to reach an arbitrary sum, it would still be authorized to make its tests and make provisions which should give it a reasonable and proper factor of safety over and above the amount of pressure which would be permitted under that statute. But if the jury believe that after the commencement of this case the plaintiff unnecessarily and unreasonably expended money in the purchase of new couplers and exchanged new couplers for the old for the alleged purpose of constructing a line which would stand a pressure of one thousand pounds to the square inch without regard to this question of the simple factor of safety, then

the court instructs you that you should not find for the plaintiff as damages the sum of money so expended for that purpose."

Thereupon the plaintiff, by its counsel, also then and there duly excepted to that portion of the foregoing charge of the court to the jury which is as follows:

"Gentlemen, if on the review and examination of this testimony you shall be satisfied that the plaintiff has failed to make out the case which has been pointed out, by the preponderance of the testimony, of showing that the defects in the pipe were due to faults in the mill, with which the defendant is chargeable, if he has failed in that, then you cannot of course find in favor of the plaintiff upon the issues as made by him."

"If, on the other hand, you are satisfied with the testimony  
647 that the plaintiff shows that the defects in the pipe were due to the failure in the manufacture or failure on the part of the defendant, then you would have to consider the question of the damages to which he is entitled."

Thereupon the plaintiff, by its counsel, also then and there duly excepted to that portion of the foregoing charge of the court to the jury which is as follows:

"You will bear in mind, gentlemen, that defects here and there in the pipe cannot be recovered for in this action. The plaintiff sues on a total failure of the pipe. He cannot recover, in this action at any rate, for defects which may have existed here and there in the pipe. It must be a failure, which extends, as I have explained to you, through the whole lot of pipe so as to make it insufficient for the purpose of that line. And you will then consider the testimony of the inspectors in that view and for that purpose."

Thereupon the plaintiff, by its counsel, also then and there duly excepted to that portion of the foregoing charge of the court to the jury which is as follows:

"If you find in favor of the plaintiff upon the issue as state to you, that the fault was the fault of the defendant, then the plaintiff is entitled to recover such damages as were reasonably incurred by reason of such defects."

Thereupon the plaintiff, by its counsel, also then and there duly excepted to the portion of the foregoing charge of the court to the jury which is as follows:

"You are instructed, gentlemen, that the contract contemplated and provided for the construction of a line with screw joints, and not with lead joints. The specifications do not call for any particular form of recess or other provision for lead calking, and a diversity or absence of such recess or other provision

does not of itself constitute a breach of the contract, unless you believe from the evidence that in the state of the art of pipe making, as it existed when the pipe was made for delivery under this contract, a provision for lead calking was customary or reasonably necessary as incidental to the making of a screw joint. In respect to the dove-tail recess contained in the heavier collar subsequently used, there is evidence tending to show that the use of lead in such a recess is not a mere incident to the use of a screw joint, but it is in substance a separate and additional joint, independent of the screw. If you believe this to be true, then it was no part of the duty of the Crane Company under its contract to furnish the collars with such dove-tail recess for lead calking."

Thereupon the plaintiff, by its counsel, also then and there duly excepted to that portion of the foregoing charge of the court to the jury which is as follows:

"If you find further that the pipe was in accordance with the contract, and if you believe from the evidence that the Crane Company was able, ready and willing at and after the 12th day of February, 1891, to furnish and deliver within a reasonable time after receiving a demand for delivery, and designation of delivery points, the balance of the pipe called for by its contract with the Columbus Company, and of the quality and character substantially in accordance with that contract, and that the Columbus Company, on the 12th of February, notified the Crane Company that it would not receive further deliveries of pipe under the contract, then the Crane Company is entitled to recover a commission of two and one-half per cent. on the undelivered pipe at the contract price. That has been computed, and is stated in the statement furnished by the defendant at \$18,776 and some cents, and they would also be entitled to interest on that amount."

Thereupon the plaintiff, by its counsel, also then and there duly excepted to that portion of the foregoing charge of the court to the jury which is as follows:

"There is further evidence tending to show that the Pittsburgh Tube Company had purchased material for the manufacture of a considerable quantity of pipe to be delivered under the contract in question, and had manufactured some such pipe, which pipe and material it was obliged to sell, and did sell, at a loss, by reason of the refusal of the Columbus Company to receive further deliveries of pipe. If you believe that the pipe previously delivered was in substantial accordance with the contract—that is, previously delivered by the Crane Company—was in substantial accordance with the contract, or if you believe that

the refusal of the Columbus Company to receive further deliveries of pipe was wrongful, under the instructions of the court, then the Crane Company is entitled to recover in this suit the reasonable amount of loss shown by the evidence to have been sustained by the Pittsburg Tube Company, and to have been paid to that company by the Crane Company, with interest thereon from the date of payment. That amount is also stated."

Thereupon the plaintiff, by its counsel, then and there requested the court to further charge the jury as follows:

"These parties, after the September test, agreed to suspension of the delivery of the pipe for the purpose of ascertaining whether or not the pipe already delivered answered the tests or requirements of the contract. When the Crane Company acted with the Columbus Company in appointing inspectors to ascertain that fact, they were bound by that agreement; and if thereafter the Crane Company instructed its inspector to take the judgment of the inspector appointed by the plaintiff, if he did so, the Crane Company must still abide by the result of that inspection. It cannot repudiate it."

But the court refused so to charge the jury as requested by the plaintiff, to which refusal the plaintiff, by its counsel, then and there duly excepted.

Thereupon the plaintiff, by its counsel, requested the court to further charge the jury as follows:

"That where it appears from any letters introduced in evidence that the information contained therein relating to this inspection or completion of the pipe came from or through defendant's inspector, that it was not information derived through the plaintiff, the defendant is bound by it as a matter of its own knowledge."

But the court refused so to charge the jury in accordance with such request, to which refusal the plaintiff, by its counsel, then and there duly excepted.

650 Thereupon the plaintiff, by its counsel, then and there requested the court to further charge the jury as follows:

"By the contract entered into between the parties, and the form attached to it and called Exhibit B, the defendant, while it did not assume an obligation to furnish to the plaintiff a tight pipe line sufficient to stand the pressure of one thousand pounds of gas or air to the square inch, did undertake to furnish pipe and collars which should not only be made in accordance with the specifications, but which should be sufficient when laid in line with due



plaintiff care and skill to stand such pressure, and to prove tight in line; nor is it sufficient to relieve the defendant from this, the obligation clearly expressed in the contract and assumed by it, that you may be of opinion from the evidence that at the time the contract was entered into, pipe and collars made in accordance with the specifications contained in the contract other than those referring to tests in line, with all due care and skill at the various pipe mills at which it was contemplated by the parties this pipe should be made, in accordance with the then state of the art of pipe making, would be incapable of standing such high pressure when properly laid in line.

“ The obligation of the defendant voluntarily assumed by its contract was to furnish such pipe and collars as should be capable when properly laid in line of retaining its contents at this high pressure.

“ Whether pipe and collars such as those specified in the contract made in accordance with the greatest skill and accuracy known to the art of pipe making were capable when properly laid, of making a tight line under this high pressure, was a risk assumed not by the plaintiff but by the defendant; and any pipe and collars incapable of making a tight line at this pressure if properly laid in line, can not be regarded by you as answering the conditions of the obligations assumed by the defendant in entering into this contract.”

But the court refused so to charge the jury as requested by the plaintiff, to which refusal the plaintiff, by its counsel, then and there duly excepted.

Thereupon the plaintiff, by its counsel, then and there requested the court to further charge the jury, as follows:

“ If the pipe in controversy as a whole owing to slight defects in threading and taper or otherwise incident to its manufacture was incapable when properly and carefully handled and laid in line of making a tight line at a pressure of 1,000 pounds to the square inch, either gas or air, then it did not answer the requirements of the contract and the plaintiff was neither bound to receive it under the contract nor to pay the contract price for it.”

But the court refused so to charge the jury as requested by the plaintiff, to which refusal the plaintiff, by its counsel, then and there duly excepted.

Thereupon the plaintiff, by its counsel, then and there requested the court to further charge the jury as follows:

“ The plaintiff was not bound to receive from the defendant any pipe whatever which did not conform to the requirements of the contract, in its capacity if properly laid in line to prove tight in line at a pressure of one thousand pounds to the square-inch, gas or



air, and unless you find from a fair preponderance of the evidence that the pipe delivered by the defendant, under the contract, to the plaintiff, was up to the contract requirements in this regard, the defendant is not entitled to recover the contract price thereof, however you may find as to the other matters in evidence."

But the court refused so to charge the jury as requested by the plaintiff, to which refusal the plaintiff, by its counsel, then and there duly excepted.

Thereupon the plaintiff, by its counsel, then and there requested the court to further charge the jury as follows:

"As to the care necessary to be observed by the plaintiff in handling this pipe after it was delivered to them at the various points of delivery in the State of Indiana, the plaintiff undoubtedly must be held to a high degree of care. The contract, however, does not impose any obligation in express terms, as to the degree of care and caution to be observed by the plaintiff in this regard. Its obligation in respect thereof arises from the fact that it can not hold the defendant liable for any failure on the part of the pipe when laid in line to prove tight at the test pressure provided for, which was due to a lack of proper care and caution in the handling  
652 of the pipe after it was delivered to the plaintiff.

"But in unloading, hauling to the line and laying this pipe, the plaintiff was not required to employ methods heretofore unknown in handling and laying pipe of this character, nor to employ appliances and tools not then known to the plaintiff as being better or more efficient than those then in general use.

"The plaintiff did not undertake with the defendant that this line should be laid in any particular method, but only to use such high degree of skill and diligence in respect of the handling and laying thereof as, in view of the general methods then pursued by those most competent in the business of handling and laying such pipe, were best calculated to secure a tight and efficient line."

But the court refused so to charge the jury as requested by the plaintiff, to which refusal the plaintiff, by its counsel, then and there duly excepted.

Thereupon the plaintiff, by its counsel then and there requested the court to further charge the jury as follows:

"On the 9th day of July, 1890, before any of the pipe in controversy had been delivered, the defendant through its secretary, Mr. Forman, wrote to four of the mills who were to make a large part of the pipe to be delivered by the defendant to the plaintiff under this contract, calling their attention to a sample of the coupling to be furnished with the pipe, and directing them to strictly observe the gauge, viz: eight threads to the inch with  $\frac{5}{8}$  inch taper, etc.

“ In view of this circumstance it is not open to the defendant now to say that couplings threaded with a taper of  $\frac{3}{4}$ -inch to the foot are such as its contract with the plaintiff called for. That contract and specifications only required the taper to be uniform, but this act of the defendant must be regarded as to that extent an exposition of the contract or an added specification therein which the defendant is not now at liberty to disregard; and if you find from the evidence that the couplings furnished under the contract in suit were constructed with a taper of  $\frac{3}{4}$  of an inch to the foot, then such couplings were not within the terms of the contract, 653 and to that extent the defendant has been guilty of a breach of his contract and for pipe with such couplings the (plaintiff) is not entitled to recover the contract price.”

But the court refused so to charge the jury as requested by the plaintiff, to which refusal the plaintiff, by its counsel, then and there duly excepted.

Thereupon the plaintiff by its counsel, then and there requested the court to further charge the jury as follows :

“ As to the contract made between the plaintiff and the Indiana Natural Gas & Oil Company and the modifications thereof offered in evidence, I charge you that you cannot regard such contract nor any of its provisions nor the modification thereof in reaching your verdict in this case. The rights and obligations of the parties to this suit must be determined solely upon the contract entered into between them, and you cannot refer to collateral agreements such as the arrangements made between the plaintiff and the Indiana Natural Gas & Oil Company for the purpose of in any way limiting or affecting the rights of the plaintiff in this suit.”

But the court refused so to charge the jury as requested by the plaintiff, to which refusal the plaintiff, by its counsel, then and there duly excepted.

Thereupon the plaintiff, by its counsel, then and there requested the court to further charge the jury as follows :

“ I charge you that the statute of the State of Indiana in force March 4th, 1891, being entitled ‘ An act to regulate the mode of procuring, transporting and using natural gas,’ and declaring an emergency, is contrary to the constitution of the United States and wholly beyond the powers of the legislature of the State of Indiana, and you cannot, therefore, in any way regard its provisions as having any bearing whatever in ascertaining the rights of the parties to this suit.”

But the court refused so to charge the jury as requested by the plaintiff, to which refusal the plaintiff, by its counsel, then and there duly excepted.

Thereupon the plaintiff, by its counsel, then and there requested 654 the court to further charge the jury as follows :

*Request of Plaintiff as to Charge to Jury.*

501

"As to the expenditures made by the plaintiff in changing the collars upon the pipe delivered, and in repairing the same, I charge you that the plaintiff is entitled to recover such amount as it is shown by the evidence to have expended in this way, less any sum which under these instructions you may find to be due to the defendant, provided you also find that such substitution of collars and repairs were reasonably necessary to make such pipe tight in line at high pressure, provided the amount paid out for such collars and in making such repairs was only so much as was reasonably necessary to that end."

But the court refused so to charge the jury as requested by the plaintiff, to which refusal the plaintiff, by its counsel, then and there duly excepted.

Thereupon the jury retired and thereafter returned a verdict for the defendant for \$98,085.94. Thereupon the plaintiff entered a motion to set aside said verdict and for a new trial of said cause. Afterwards the court overruled said motion and entered judgment on the verdict and allowed time for the plaintiff to file its bill of exceptions herein. And forasmuch as the matters and things herein set forth are not of record in this cause, and to the end that the same may be made matter of record herein, the judge who tried said cause hath, at the request of the plaintiff, signed, sealed, settled and allowed this bill of exceptions herein this fifteenth day of August, in the year 1898.

WM. H. SEAMAN, [SEAL.]  
*Judge.*

Correct :

WING, CHADBOURNE & LEACH.

Filed August 16, 1898.

S. W. BURNHAM, *Clerk.*

et c.  
ing.

IN THE CIRCUIT COURT OF THE UNITED STATES FOR THE NORTHERN  
DISTRICT OF ILLINOIS.

The Columbus Construction Company  
vs.  
The Crane Company.

Now comes the above named Columbus Construction Company and respectfully represents that in the record and proceedings in a certain cause lately depending in the Circuit Court of the United States for the Northern District of Illinois, wherein this petitioner was plaintiff and the above named Crane Company was defendant, and in the judgment in said cause against this petitioner manifest errors have intervened, to the great injury of the petitioner, and that in this case the construction and application of the Constitution of the United States are involved and the law of a State is claimed to be in contravention of the Constitution of the United States, as more particularly appears by an assignment of errors filed herein. Therefore, petitioner respectfully prays that a writ of error may be allowed, to bring before the Supreme Court of the United States the record of the proceedings and judgment aforesaid, and that the same may be by that court inspected and examined, and the errors complained of corrected according to law.

Respectfully submitted,

J. R. CUSTER and  
S. S. GREGORY,  
*Attorneys for Plaintiff & Petitioner.*

(Endorsed): Filed Aug. 18, 1898.

S. W. BURNHAM, *Clerk.*



sonable inspection and delivery, but could only be ascertained reasonably and fairly by a test in line, as contemplated by the contract, and if the plaintiff has met all the requirements, which will be further explained to you, to charge the defendant with liability, your finding upon this issue must be in favor of the plaintiff and against the defendant."

3d. That the said Circuit Court also erred on the trial of this cause in that it charged the jury, among other things, as follows:

"By this contract the Crane Company, defendant, did not become obligated, did not promise to assume to furnish the defendant a tight line under the high pressure named in the contract, as it had no part, and took upon itself no obligation as to the duties of handling, caring for, screwing into line and laying the pipe after it had left the hands and care of the defendant. But it did assume and agree to furnish pipe and collars of material strength, weight and threading which would substantially conform to the specifications of the contract, and it further agreed and  
658 promised that the pipe so furnished should be sufficient in those particulars, when laid in line with due care and skill, to stand the pressure of one thousand pounds of gas to the square inch, and to prove tight in line when tested. It was the quality and competency of the pipe and collars to this end and test that was thus warranted by the defendant, and not a tight pipe line."

4th. That the said Circuit Court also erred on the trial of this cause in that it charged the jury, among other things, as follows:

"The fact that portions of the line as laid and sections of the pipe when screwed together, as shown by the testimony, leaked seriously when tested with air, either at the tests of September, 1890, at a pressure of one hundred pounds or less, or at the later pressure of five hundred pounds or more, does not prove that the pipe was faulty or insufficient as delivered, because it is incumbent on the plaintiff to furnish satisfactory evidence that it had performed with due care and skill its portion in the undertaking."

5th. That the said Circuit Court also erred on the trial of this cause, in that it charged the jury, among other things, as follows:

"The testimony tends to show that the line covered by the contract was beyond the usual requirement in the length of line and in the high pressure called for, because of the great distance from the gas fields to the delivery points. For the purpose of charging liability upon the defendant for defects in the pipe and collars as laid the plaintiff must be held to a degree of care on  
659 its part of like character with that imposed upon the defend-

ant, to the extent that care and skill in the handling, screwing together and laying equal in importance sufficiency of the pipe to secure a tight line."

6th. That the said Circuit Court also erred on the trial of this cause, in that it charged the jury, among other things, as follows:

"It was the object originally of this undertaking to accomplish the laying during the season of 1890. The plaintiff was required to exercise this high degree of care commensurate with the character of the line, the character of the work contemplated, and care, as I have said, commensurate with the care imposed upon the defendant in the manufacture of the pipe; but would not be called upon to exercise an extreme care which would be beyond the reasonable requirements of practical operation in the field."

7th. That the said Circuit Court also erred on the trial of this cause, in that it charged the jury, among other things, as follows:

"You are further instructed that the provisions of the contract, as to the pipe proving tight in line, must receive a reasonable construction, both with reference to the state of the art of pipe-making and of the piping of gas as known and existing at the date of the contract, and with regard to the conditions which must be met by this line owing to its length, the high pressure required and the need of economy and safety in conducting the gas to delivery points.

"There is evidence tending to show that no gas line had been made which was absolutely tight at even less pressure than 660 this contract called for. The term 'tight in line,' as employed in this contract, must be interpreted as reasonably tight in line, considering the objects and conditions of the undertaking, and the possibilities of the art and business, as then existing and understood according to the evidence."

8th. That the said Circuit Court also erred on the trial of this cause in that it charged the jury, among other things, as follows:

"Therefore gentlemen, your first and principal enquiry must be this: Considering all the testimony which bears upon the quality of pipe delivered, does the testimony preponderate, is the stronger and better evidence in favor of the plaintiff's contention that the pipe was so generally defective in thread, taper and collars, in weight, thread and taper when received by the plaintiff, and to such extent, that the pipe and collars were incapable, as received, of making a tight line in accordance with the contract, as defined, with reasonable inspection and rejection for obvious defects on the part of the plaintiff, and with such care on the part of the plaintiff, in handling and laying as was practicable, and as was called for by the definitions given."



9th. That the said Circuit Court also erred on the trial of this cause in that it charged the jury, among other things, as follows:

“It is claimed on the part of the defense that that testimony itself discloses that there were faults in the screwing together of the pipe, by which it was liable to at least become cross-threaded, and by which it would not be sent up to a proper set with that degree of accuracy which was essential to preserve a tight line under 661 the requirements of this contract. If the testimony of the plaintiff in those particulars fails to satisfy you upon that side, that there was an exercise of the degree of care which had been defined to you, then the plaintiff cannot recover damages in this action as for defect in the quality of the pipe, because the failure of care in those regards is so manifestly a cause of some failure in the line to meet the required tests, that it would be impossible for you to divide the responsibility.”

10th. That the said Circuit Court also erred on the trial of this cause in that it charged the jury, among other things, as follows:

“In screwing the pipe together there has been considerable testimony introduced by the defendant tending to show some neglect in that regard. For instance, some testimony has been introduced that when a bend was required to be made in the pipe instead of using heat and fire to make the bend, so that the pipe should come down gradually to it, that they bent it cold, as the expression is used, by men getting on each end of it and bearing down either by their weight or with the use of tongs; and it is claimed on the part of the defendant, and witnesses have testified that that would subject the threading of the pipe and collars at this place of union to a severe strain, and would be liable to produce a leak. You must determine, gentlemen, from all of the testimony whether the neglects in the manner of screwing together and laying were of such nature that they would fairly and reasonably account for the leaky quality of the portion of the line which was tested, which was put together and tested, and for a large portion of the defects, which were found by the inspectors in the pipe as examined in November—December, I think it was, of 1890.”

662 11th. That the said Circuit Court also erred on the trial of this cause in that it charged the jury, among other things, as follows:

“It further appears in the evidence, and by the contract itself, that the Crane Company was designated as the agent of the plaintiff company, to a certain extent, in making these purchases. Although the Crane Company is charged with an additional responsibility, it was still to a certain extent an agent for the Columbus Company, and in the letters repeatedly, or certainly in one of the

most important of the letters which has been referred to here as written by Mr. Crane, he refers in writing to the mill people to the fact that he writes as a representative of the Columbus Company. Now, in so far as those statements must be attributable to his exercise of the obligation which he may have felt at that time that he was owing to the Columbus Company as an agent, and in so far as the representations were made in that capacity alone and not as positive statements of existing facts, stated of his own knowledge or as of information which had come to him, upon which he relied as though it were his knowledge, the statement in those letters are not to be considered as evidence of the fact of the quality of this pipe. It is only so far as you find from the letters that they are intended as a deliberate statement of facts that they should be considered as evidence at all of the character and quality of this pipe."

12th. That the said Circuit Court also erred on the trial of this cause in that it charged the jury, among other things, as follows:

"It was clearly understood at the making of this contract—  
I think the evidence clearly shows—at least it tends to show  
663 that the Crane Company were not dealt with as the manufacturers of the pipe. It was understood by the parties that they were to make the purchases of the pipe from the mills. And so far as the Crane Company were representing the claims to them made by the Columbus Company, through those letters, and information coming to them as representatives of the Columbus Company, they are not to be considered as proof of existing facts. But you must look to the proper, legitimate evidence in the case to ascertain what the fact is."

13th. That the said Circuit Court also erred on the trial of this cause in that it charged the jury, among other things, as follows:

"Gentlemen, with reference to the tests you will remember that the contract called for a test in line at a thousands pounds. You are further instructed in that regard, it appears from the evidence that the pipe contracted for was intended for the construction of a natural gas pipe line from Greentown, Indiana, to the boundary line between the States of Indiana and Illinois, a distance of about a hundred and sixteen miles, and that the pipe actually delivered, with a change of collars, was used by the plaintiff in the partial construction of said line.

"It further appears that a statute of the State of Indiana, enacted March 4, 1891, provided in substance that where natural gas is to be transported through wrought iron pipes or casings such pipe lines should be subjected to a test of at least 400 pounds to the square inch, and that the transportation of such gas through

such pipe at a pressure exceeding 300 pounds to the square inch was prohibited, as well as the transportation of gas through 664 such lines at any pressure exceeding the natural pressure of the gas flowing from the wells.

"It further appears from the evidence that the Columbus Company and the Indiana Natural Gas & Oil Company were parties to a litigation to determine the constitutionality of this law, and in 1891, the Supreme Court of the State of Indiana held said law to be constitutional and valid. It further appears from the evidence that about the 7th day of July, 1891, said Columbus Company, and the Indiana Natural Gas & Oil Company voluntarily modified their agreement for the construction of the pipe line in question so as to reduce the test pressure required upon said line to 400 pounds to the square inch, with a loss of not more than ten per cent., so as to reduce the working pressure to be employed on said line to 300 pounds to the square inch. Now, in that regard the plaintiff would not be justified in putting an expense into its work of redeeming its line from its alleged fault, or, rather, in repairing and putting the new collars upon the pipe or otherwise to establish the line making expense to establish the line, to carry up to a pressure of one thousand pounds which it was not required to have in fact, and which was prohibited by law, from engaging in the transportation of gas at such a pressure."

14th. That the said Circuit Court also erred on the trial of this cause in that it charged the jury, among other things, as follows:

"So that although the plaintiff would not be authorized to incur an unnecessary expense, an expense in putting in provisions beyond the amount which would be reasonably necessary for that purpose, that is, to reach an arbitrary sum, it would still be authorized to make its tests and make provision which should give it a reasonable and proper factor of safety over and above the amount 665 of pressure which would be permitted under that statute.

But if the jury believe that after the commencement of this case the plaintiff unreasonably and unnecessarily expended money in the purchase of new couplers and exchanged new couplers for the old for the alleged purpose of constructing a line which would stand a pressure of one thousand pounds to the square inch without regard to this question of the simple factor of safety, then the court instructs you that you should not find for the plaintiff as damages the sum of money so expended for that purpose."

15th. That the said Circuit Court also erred on the trial of this cause, in that it charged the jury, among other things, as follows:

"Gentlemen, if on the review and examination of this testi-

mony, you shall be satisfied that the plaintiff has failed to make out the case which has been pointed out, by the preponderance of the testimony, of showing that the defects in the pipe were due to faults in the mill, with which the defendant is chargeable, if he has failed in that, then you cannot, of course, find in favor of the plaintiff upon the issues as made by him.

If, on the other hand, you are satisfied with the testimony, that the plaintiff shows that the defects in the pipe were due to the failure in the manufacture, or failure on the part of the defendant, then you would have to consider the question of the damages to which he is entitled."

16th. That the said Circuit Court also erred on the trial of this cause in that it charged the jury, among other things, as follows:

"You will bear in mind, gentlemen, that defects here and there in the pipe cannot be recovered for in this action. The plaintiff sues upon a total failure of the pipe. He cannot recover, in this action at any rate, for defects which may have existed here and there in the pipe. It must be a failure which extends, as I have explained to you, through the whole lot of pipe so as to make it insufficient for the purposes of that line. And you will then consider the testimony of the inspectors in that view and for that purpose."

17th. That the said Circuit Court also erred on the trial of this cause, in that it charged the jury, among other things, as follows:

"If you find in favor of the plaintiff upon the issue as stated to you, that the fault was the fault of the defendant, then the plaintiff is entitled to recover such damages as were reasonably incurred by reason of such defects."

18th. That the said Circuit Court also erred on the trial of this cause, in that it charged the jury, among other things, as follows:

"You are instructed, gentlemen, that the contract contemplated and provided for the construction of a line with screw joints, and not with lead joints. The specifications do not call for any particular form of recess or other provision for lead calking, and a diversity or an absence of such recess or other provision does not of itself constitute a breach of the contract, unless you believe from the evidence that in the state of the art of pipe-making, as it existed when the pipe was made for delivery under this contract, a provision for lead calking was customary or reasonably necessary as incidental to the making of a screw joint. In respect to the dove-tail recess contained in the heavier collar subsequently used, there is evidence tending to show that the use of lead in such a re-

cess is not a mere incident to the use of a screw joint, but is in  
667 substance a separate and additional joint, independent of the screw. If you believe this to be true, then it was no part of the duty of the Crane Company under its contract to furnish its collars with such dove-tail recess for lead calking."

19th. That the said Circuit Court also erred on the trial of this cause in that it charged the jury, among other things, as follows:

"If you find further that the pipe was in accordance with the contract, and if you believe from the evidence that the Crane Company was able, ready and willing at and after the 12th day of February, 1891, to furnish and deliver within a reasonable time after receiving a demand for delivery and designation of delivery points, the balance of the pipe called for by its contract with the Columbus Company, and of the quality and character substantially in accordance with that contract, and that the Columbus Company on the 12th of February notified the Crane Company that it would not receive further deliveries of pipe under the contract, then the Crane Company is entitled to recover a commission of two and one-half per cent. upon the undelivered pipe at the contract price. That has been computed, and is stated in the statement furnished by the defendant at \$18,776 and some cents, and they would also be entitled to interest on that amount."

20th. That the said Circuit Court also erred on the trial of this cause in that it charged the jury, among other things, as follows:

"There is further evidence tending to show that the Pittsburgh Tube Company had purchased material for the manufacture of a considerable quantity of pipe to be delivered under the contract in question, and had manufactured some such pipe, which pipe and material it was obliged to sell, and did sell at a loss, by reason of the refusal of the Columbus Company to receive further deliveries of pipe. If you believe that the pipe previously de-  
668 livered was in substantial accordance with the contract—that is previously delivered by the Crane Company—was in substantial accordance with the contract, or if you believe that the refusal of the Columbus Company to receive further deliveries of pipe, was wrongful, under the other instructions of the court, then the Crane Company is entitled to recover in this suit the reasonable amount of the loss shown by the evidence to have been sustained by the Pittsburgh Company, and to have been paid to that company by the Crane Company, with interest thereon from the date of payment. That amount is also stated."

21st. That the said Circuit Court also erred on the trial of this cause in that it refused to charge the jury as requested by the plaintiff, as follows:

" These parties, after the September test, agreed to a suspension of the delivery of the pipe for the purpose of ascertaining whether or not the pipe already delivered answered the tests or requirements of the contract. When the Crane Company acted with the Columbus Company in appointing inspectors to ascertain that fact, they were bound by that agreement; and if thereafter the Crane Company instructed its inspector to take the judgment of the inspector appointed by the plaintiff, if he did so, the Crane Company must still abide by the result of that inspection. It cannot repudiate it."

22. That the said Circuit Court also erred on the trial of this cause in that it refused to charge the jury as requested by the plaintiff as follows:

" That where it appears from any letters introduced in evidence that the information contained therein relating to this inspection or completion of the pipe came from or through defendant's inspector that it was not information derived through the plaintiff, the defendant is bound by it as a matter of its own knowledge."

669 23d. That the said Circuit Court also erred on the trial of this cause in that it refused to charge the jury as requested by the plaintiff, as follows:

" By the contract entered into between the parties and the form attached to it and called Exhibit B, the defendant, while it did not assume an obligation to furnish to the plaintiff a tight pipe line sufficient to stand the pressure of one thousand pounds of gas or air to the square inch, did undertake to furnish pipe and collars which should not only be made in accordance with the specifications, but which should be sufficient when laid in line with due care and skill to stand such pressure and to prove tight in line; nor is it sufficient to relieve the defendant from this, the obligation clearly expressed in the contract and assumed by it, that you may be of opinion from the evidence that at the time the contract was entered into, pipe and collars made in accordance with the specifications contained in the contract other than those referring to tests in line, with all due care and skill at the various pipe mills at which it was contemplated by the parties this pipe should be made, in accordance with the then state of the art of pipe making, would be incapable of standing such high pressure when properly laid in line.

" The obligation of the defendant voluntarily assumed by its contract was to furnish such pipe and collars as should be capable when properly laid in line of retaining its contents at this high pressure.

" Whether pipe and collars such as those specified in the contract made in accordance with the greatest skill and accuracy known

to the art of pipe making were capable, when properly laid, of making a tight line under this high pressure, was a risk assumed not by the plaintiff but by the defendant; and any pipe and 670 collars incapable of making a tight line at this pressure if properly laid in line cannot be regarded by you as answering the conditions of the obligations assumed by the defendant in entering into this contract."

24th. That the said Circuit Court also erred on the trial of this cause in that it refused to charge the jury as requested by the plaintiff, as follows:

"If the pipe in controversy as a whole owing to slight defects in threading and taper or otherwise incident to its manufacture was incapable when properly and carefully handled and laid in line of making a line tight at a pressure of 1,000 pounds to the square inch, either gas or air, then it did not answer the requirements of the contract, and the plaintiff was neither bound to receive it under the contract nor to pay the contract price for it."

25th. That the said Circuit Court also erred on the trial of this cause in that it refused to charge the jury as requested by the plaintiff, as follows:

"The plaintiff was not bound to receive from the defendant any pipe whatever which did not conform to the requirements of the contract in its capacity if properly laid in line to prove tight in line at a pressure of one thousand pounds to the square inch, gas or air, and unless you find from a fair preponderance of the evidence that the pipe delivered by the defendant under the contract to the plaintiff was up to the contract requirements in this regard, the defendant is not entitled to recover the contract price thereof, however you may find as to other matters in evidence."

26th. That the said Circuit Court also erred on the trial of this cause in that it refused to charge the jury as requested by 671 the plaintiff; as follows:

"As to the care necessary to be observed by the plaintiff in handling this pipe after it was delivered to them at the various points of delivery in the State of Indiana, the plaintiff undoubtedly must be held to a high degree of care. The contract, however does not impose any obligation in express terms as to the degree of care and caution to be observed by the plaintiff in this regard. Its obligation in respect thereof arises from the fact that it cannot hold the defendant liable for any failure on the part of the pipe when laid in line to prove tight at the test pressure provided for which was due to a lack of proper care and caution in the handling of the pipe after it was delivered to the plaintiff.

"But in unloading, hauling to the line and laying this pipe the plaintiff was not required to employ methods theretofore unknown



in handling and laying pipe of this character, nor to employ appliances and tools not then known to the plaintiff as being better or more efficient than those then in general use.

"The plaintiff did not undertake with the defendant that this line should be laid in any particular method, but only to use such high degree of skill and diligence in respect of the handling and laying thereof as in view of the general methods then pursued by those most competent in the business of handling and laying such pipe were best calculated to secure a tight and efficient line."

27th. That the said Circuit Court also erred on the trial of this cause in that it refused to charge the jury as requested by the plaintiff, as follows:

"On the 9th day of July, 1890, before any of the pipe in controversy had been delivered, the defendant through its secretary,

Mr. Forman, wrote to four of the mills who were to make a 672 large part of the pipe to be delivered by the defendant to the plaintiff under this contract, calling their attention to a sample of the coupling to be furnished with the pipe, and directed them to strictly observe the gauge, viz: eight threads to the inch with  $\frac{5}{8}$  inch taper, etc.

"In view of this circumstance it is not open to the defendant to say that couplings threaded with a taper of  $\frac{3}{4}$  inch to the foot are such as its contract with the plaintiff called for. That contract and specifications only required the taper to be uniform, but this act of the defendant must be regarded as to that extent an exposition of the contract or an added specification therein which the defendant is not now at liberty to disregard, and if you find from the evidence that the couplings furnished under the contract in suit were constructed with a taper of  $\frac{3}{4}$  of an inch to the foot, then such couplings were not within the terms of the contract, and to that extent the defendant has been guilty of a breach of his contract and for pipe with such couplings the plaintiff is not entitled to recover the contract price."

28th. That the said Circuit Court also erred on the trial of this cause in that it refused to charge the jury as requested by the plaintiff, as follows:

"As to the contract made between the plaintiff and the Indiana Natural Gas & Oil Company and the modifications thereof offered in evidence, I charge you that you cannot regard such contract nor any of its provisions nor the modifications thereof in reaching your verdict in this case. The rights and obligations of the parties to this suit must be determined solely upon the contract entered into between them, and you cannot refer to collateral agreements such as the arrangements made between the plaintiff and the Indiana Natural Gas & Oil Company for the purpose of in any way limiting or affecting the rights of the plaintiff in this suit."

29th. That the said Circuit Court also erred on the trial of this cause in that it refused to charge the jury as requested by the plaintiff, as follows:

"I charge you that the statute of the State of Indiana in force March 4, 1891, being entitled 'An act to regulate the mode of procuring, transporting and using natural gas' and declaring an emergency, is contrary to the Constitution of the United States and wholly beyond the powers of the Legislature of the State of Indiana, and you cannot, therefore, in any way regard its provisions as having any bearing whatever in ascertaining the rights of the parties to this suit."

30th. That the said Circuit Court also erred on the trial of this cause in that it refused to charge the jury as requested by the plaintiff, as follows:

"As to the expenditures made by the plaintiff in changing the collars upon the pipe delivered, and in repairing the same, I charge you that the plaintiff is entitled to recover such amount as it is shown by the evidence to have expended in this way, less any sum which under these instructions you may find to be due to the defendant, provided you also find that such substitution of collars and repairs were reasonably necessary to make such pipe tight in line at high pressure, provided the amount paid out for such collars and in making such repairs was only so much as was reasonably necessary to that end."

31st. That the said Circuit Court also erred upon the trial of this cause in that it admitted in evidence a contract between the Columbus Construction Company, the plaintiff in this cause, and the Indiana Natural Gas & Oil Company, dated the fifth of 674 June, 1890, together with certain specifications, exhibits and particulars, and subsequent modification thereof dated the seventh of July, 1891, which said papers thus admitted over the objection of the plaintiff are as follows:

Memorandum of agreement, made and entered into this fifth day of June, 1890, by and between the Columbus Construction Company, a corporation of the State of New Jersey, of the first part, and hereinafter called the Construction Company, and the Indiana Natural Gas and Oil Company, a corporation of the State of Indiana, party of the second part, and hereinafter called the Natural Gas Company.

Section 1. The Construction Company hereby agrees to convey or cause to be conveyed or assigned to the Natural Gas Company all rights, title and interest acquired or held by it, in and to certain gas and oil lands and leases in the State of Indiana, together with the gas wells and pipes and all other property thereto belonging, and more particularly described in a schedule hereunto

attached, marked "Exhibit A" and which schedule is hereby made a part hereof. Ass  
E  
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Section 2. The Construction Company further agrees that it will procure and convey, or cause to be procured and conveyed to the Natural Gas Company, a right of way for a pipe line or lines from certain gas or oil wells situated in Howard and Grant counties, in the State of Indiana, to a point near Greentown, Indiana, and from thence to a point on Indiana boulevard on the boundary line between the States of Indiana and Illinois, provided that there cont demnation proceedings are necessary in order to obtain said right of way, the Natural Gas Company will at the request of the Construction Company institute such proceedings in accordance with the laws of Indiana in that behalf, and will thereunder 674½ acquire such right of way, such proceedings to be under the direction of said Construction Company and said Construction Company shall pay all the cost and expense thereof, and all such sums of money as may be awarded or fixed as compensation for lands taken, or for damages.

The number and location of said wells and the proposed line and description of said right-of-way are more particularly set forth and shown upon "Exhibit B" attached hereto, and made a part hereof, provided, that the Construction Company may locate any portion or portions of said right-of-way, not exceeding one mile to the right or left of said proposed line, if necessary, to avoid obstacles.

Section 3. The Construction Company further agrees to locate and drill certain gas wells, and to furnish all the materials and labor for, and construct the pipe lines of the Natural Gas Company, from the said wells, and from the wells shown in "Exhibit B," to the said point near Greentown, Indiana, and thence to said point on the boundary line between the States of Illinois and Indiana, upon the right-of-way shown in said "Exhibit B," or as said right-of-way may be changed in accordance with the provisions in Section 2 hereof.

The manner of construction, the capacity and performance of said pipe lines and their appurtenances, and the character of the materials to be used therein, are to be in accordance with drawings and specifications herto attached, and marked "Exhibit C," and which are hereby made a part hereof.

Section 4. For the due and faithful performance by said Construction Company, of all the matters and things herein agreed to be done and performed by said Construction Company as particularly shown by said several exhibits, the said Natural Gas 675 Company will pay to the said Construction Company, as follows:

Two million dollars in the full paid up shares of the capital stock of the Natural Gas Company, and four million dollars in the first mortgage six per cent. gold bonds of the Natural Gas Company, said bonds to be a part of a total authorized issue of five million dollars, the remaining one million dollars thereof to be issued from time to time, as the said Natural Gas Company may require. And all of said five million dollars of bonds shall be equally and without preference of one bond over another, and without reference to the actual time of issue, secured by a first mortgage or deed of trust, of even date with the said bonds made to the Illinois Trust and Savings Bank, of Chicago, and Winter, of Indianapolis, in the State of Indiana, as trustees, and conveying to said trustees all the property of said Natural Gas Company of every kind, real, personal and mixed, leases, contracts, easements, rights-of-way, pipes and connections, rights, privileges and franchises which may then be owned or controlled, or which may at any time thereafter be acquired, owned, controlled or enjoyed by said Gas Company, and which deed of trust duly executed and recorded, the said Natural Gas Company shall deliver to said trustees and also shall at the same time duly execute and deliver to said trustee, the Illinois Trust and Savings Bank, four million dollars, in said first mortgage bonds which shall thereupon be authenticated by said trustee, the Illinois Trust and Savings Bank, and deposited with the said Illinois Trust and Savings Bank. The said deed of trust and the bonds secured thereby shall be approved as to form, terms and times of payment of principal and interest, by the president of said Construction Company, before the execution thereof, by said Natural Gas Company, and shall bear date the first day of July, A. D. 1890.

Upon the certificate of the president and engineer of the said Natural Gas Company that the Construction Company has  
676 complied with the provisions of section 1 and 2 hereof, except as to so much of said right-of-way as shall then be in litigation in proceedings to condemn the said Illinois Trust and Savings Bank upon the presentation or the filing with it of such certificate shall deliver to said Construction Company or as said company shall direct, one million dollars in said bonds, with abatement of the interest thereon from the date thereof to the time of such delivery, and the said Natural Gas Company at the time of the making of such certificate by its president and engineer shall execute and deliver to said Construction Company or as it may direct, certificates for twenty thousand shares full paid, of its capital stock.

And thereafter, from time to time, as the work remaining to be done hereunder by the said Construction Company progresses, the

Construction Company shall become entitled to further payment in proportion to the work done, out of the three million dollars par value of said bonds, and one million dollars of capital stock remaining to be delivered.

The president and engineer of the Natural Gas Company, shall upon request of the Construction Company, from time to time certify to the said Illinois Trust and Savings Bank the amount of work thereafter done, and the amount of bonds, to which the Construction Company has thereby become entitled and the Illinois Trust and Savings Bank shall thereupon issue and deliver the same to the Construction Company, or, as it may direct, retaining such certificate as its warrant therefor.

And upon the making of such certificates the said Gas Company shall thereupon issue and deliver as said Construction Company may direct, a proportionate part of full paid up capital stock. And when the said Construction Company shall have fully complied with this contract upon its part, then upon the acceptance 677 thereof, in writing, by the president and engineer of the Natural Gas Company, all of said four million dollars of bonds and all of said capital stock, not heretofore issued and delivered to said Construction Company or under its order, shall be issued and delivered to said Construction Company, or as it may direct, and the presentation and filing with said Illinois Trust and Savings Bank of said acceptance, shall be the warrant so said Illinois Trust and Savings Bank for the delivery of the remainder of said bonds.

Section 5. Unless the provisions of Section 1 shall be complied with within three months from the date hereof, this agreement shall be null and void, and this contract shall be fully complied with by said Construction Company on or before January 1, 1891, saving to said Construction Company such time as it may be delayed by *bona fide* legal proceedings, or by strikes.

In witness whereof, the parties hereto have caused this instrument to be executed in duplicate by their respective presidents, and attested by their respective secretaries under their respective corporate seals, this fifth day of June, A. D. 1890.

COLUMBUS CONSTRUCTION COMPANY,

By C. E. HEQUEMBOURG,

*President.*

Attest: C. K. WOOSTER,

*Secretary of Columbus Construction Company.*

[SEAL.]

INDIANA NATURAL GAS AND OIL COMPANY,

By JOHN B. COHRS,

*President.*

Attest: P. A. McEWAN,

[SEAL.] *Secretary of Indiana Natural Gas and Oil Company.*

NEW YORK, June 5, 1890.

The within contract is hereby approved by the subscribers, the holders of a majority of all the stock of the company outstanding at this date, pursuant to Section 1, Article 2 of the By-Laws of 678 the Columbus Construction Company.

CHAS. T. YERKES,  
E. C. BENEDICT.

EXHIBIT "C."

Or general outline of contract obligations of the Columbus Construction Company for delivering gas from the Indiana wells to the reducing stations at state line of Indiana and Illinois, as per terms of contract dated June 5, 1890.

THE GAS.

The gas will be led from the wells through 3, 4 and 6-inch connections, as the capacity of the wells require, direct to a main feed line 10 inches in diameter, from the pump station at Greentown, Indiana, into the leased territory, as more fully shown by Exhibit "B" to contract. Through this line gas will be carried by the well pressure to the pumping station, and delivered there at a pressure of 165 pounds gauge, or 179.7 pounds, absolute.

THE PUMPING STATION.

The pumping station includes a boiler and engine house, with accompanying pipes and fittings. In the boiler-house is located a battery of sixteen boilers 16 ft. x 60 inches, with a reserve space for sixteen boilers of same dimensions. These will furnish the power for driving a series of six compressing machines, each consisting of steam cylinder and gas cylinder, with a reserve space for an equal number for future contingencies.

This surplus power may be called into service whenever from any cause the well pressure is not sufficient to deliver the required amount of gas at the station at 165 pounds pressure, and it can be utilized in driving another series of compressors placed in the 679 same engine house between the present compressors, for which space is provided in plans. This extra set of compressors can either take gas at a lower pressure than 165 pounds and deliver it to the present compressors at 165 pounds pressure, or it can take an extra amount of gas at 165 pounds and compress it direct into the main line, thus giving additional delivery at state line.

## THE COMPRESSING MACHINE.

The compressing machine consists each of a steam cylinder 24 inches by 30-inch stroke, and a gas cylinder of 10-inch by 30-inch stroke. At eighty revolutions per minute each machine has a capacity of 3,333,000 cubic feet of gas at one atmosphere, or a total for the six machines of 20,000,000 cubic feet per 24 hours.

These machines take the gas from the feed line at 165 pounds gauge pressure, and can compress it to 525 pounds, and discharge it through the inter cooler, consisting of a loop of eight-inch pipe, into the main line.

The connections between the loop and the main line are so arranged that the gas can be discharged direct into the main line without passing through the loop, if so required. The main line or conduits from the pump station to the state line is about 116½ miles in length, and consists of two eight-inch wrought iron pipes laid parallel in one ditch. This will give a storage capacity to each conduit when filled with gas at a pressure of 300 pounds gauge of an 4,296,520 cubic feet at one atmosphere, or for the two lines a capacity of 8,593,040 cubic feet.

## HIGH PRESSURE REDUCING STATION.

At state line will be erected a high pressure reducing station. Here the gas enters the regulators at a pressure of 300 pounds or less, and is reduced to a pressure of 100 pounds and discharged 680 into the low pressure mains for delivery to the low pressure reducing station, which will regulate the pressure for city service.

This high pressure station is so arranged that the gas can be taken from either main at high pressure, passed through the regulators and discharged at low pressure into either one of the low pressure mains, or it can be passed direct from the high pressure mains into the low pressure mains without passing through the regulators.

## SCHEME.

The intention of this scheme is to provide a plant of ample capacity to deliver during the first year after construction 5,000,000 cubic feet or more of gas each 24 hours, after making allowance for 10 per cent. loss by leakage.

The construction of pipe line for delivering gas from the wells in Indiana to the reducing station at the Indiana state line may be included under the following heads, viz:



1. The feed line.
2. The pumping station.
3. The main line.
4. The reducing station.

#### FEED LINE.

The feed line will consist of a single conduit formed of wrought-iron pipe 10 inches inside diameter, connected by screw couplings and laid in ditch, extending from the pumping station into the leased territory.

The wells will be reached by 3, 4 and 6 inch connections, according to their capacity leading into the feed line, with valves for regulating the flow and pressure of the gas. This feed line 681 will deliver the gas from the wells to the pump station at Greentown by well pressure alone. It is more fully shown in Exhibit "B" to contract.

#### THE PUMPING STATION.

The pumping station will take the gas delivered by the feed line and pump it up to a pressure sufficient to force (but not exceeding 300 pounds to the square inch) the required amount of gas through the main line to the reducing station.

It will consist substantially of a pump-house and boiler-house built of brick, with roof of iron or iron and slate, supplied with six compressing machines, sixteen boilers, and all pipes, valves and fittings necessary to do the work indicated, with reserve space for an equal amount of additional power, as shown more fully by annexed plans.

#### MAIL LINE.

The main line will extend from the dump station at Greentown to the reducing station at the state line, an approximate distance of 116½ miles, and will consist of two conduits. These conduits will be made of wrought-iron pipe, eight inches inside diameter, connected by screw couplings and laid parallel, about eight inches apart, in one ditch. They will be provided with the requisite valves for regulating the flow, and cross-overs for transporting the gas from one conduit to another.

The main line will deliver the gas from the pump station by pressure generated by the compressing machines, which will at the same time utilize the well pressure at which the feed line delivers the gas to the pumps.

See specifications for main line and right of way, part of Exhibit "A" to contract.

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## REDUCING STATION.

The reducing station will take the gas supplied by the main line and reduce it to the pressure of 100 pounds for delivery. It will be built of brick, with roof of iron, or iron and slate, and will be supplied with four regulators, pipes, valves, blowoffs and heating apparatus,\* as more fully shown by annexed plans.

## DELIVERY.

The delivery of gas from the reducing station will be not less than 5,000,000 cubic feet at atmospheric volume per 24 hours.

## REFERENCES TO PLANS &amp; SPECIFICATIONS ATTACHED.

Main line specifications marked "A."

The pumping station plan marked "B," entitled general plan of compressor room for Greentown station.

Elevation "B" 1. Marked Elevation of brick structure for pumping house at Greentown station.

"B." End Elevation. Marked section of pumping house at Greentown station.

"B" 3. Specification of machinery.

Plan marked "C," entitled plan of boiler house, Greentown station.

"C" 1. Elevation of boiler house, side removed.

"C" 2. End elevation, marked boiler house, Greentown station.

Reducing station. Plan marked "D," entitled reducing station at state line, showing plan and elevation with front removed, and plan of piping.

"A."

## SPECIFICATION.

For hauling 8-inch pipe, digging trench, laying pipe and refill-  
683 trench for pipe line from Greentown, Indiana, to Chicago, Ill.

## ROUTE.

Said line is to begin at a point of the William Elliott farm, in the N. W. corner of the S. W. quarter of N. W. quarter, Section 32, Town. 34 N., R. 5 East, in Liberty Township, Howard County, Indiana, and running thence in a direction nearly north 45 west, and following a line of stakes for a distance of 116 1/2 miles, more

or less, to a point where the Indiana boulevard, in Lake County, Indiana, intersects the state line of Indiana and Illinois, the end.

#### PIPE LINE.

Between the points mentioned in the preceding paragraph there will be laid a double line of eight-inch pipe of the material and after the manner hereinafter specified.

#### PIPE.

The pipe is to be made of wrought iron of standard quality used for such purposes, eight-inch inside diameter, and to be joined together by taper screw and socket joints, threads on pipe to be not less than  $2\frac{1}{4}$  inches, V shaped, cut taper, and 8 to inch of thread. Socket joints or collars to be of extra length and thickness, threads therein to conform to taper of threads on pipe, and pipe and collar to be tested at the mill under 1,000 pounds hydraulic pressure.

The weight of the pipe shall not be less than 27.18 pounds to the foot. When laid the pipe shall stand for twenty-four consecutive hours a working pressure of 400 pounds to the square inch without manifest or material defects, or leakage exceeding 10 per cent. of its total storage capacity.

Test to be made in five-mile sections as soon as each section is completed.

#### TRENCH.

684 The trench shall not be less than two feet and ten inches deep, but at such points as grade figures are given on the stakes the trench shall be dug to correspond with said grade figures, irrespective of the ordinary depth as called for above. The trench shall be dug of such width as proper construction of the line may require.

#### CAVING DITCH.

The first party is to keep the ditch in good condition until the pipe is laid and tested, and no claim is to be made on second party by reason of the ditch caving in before the pipe is laid.

#### RIVER, CREEK OR STREAM CROSSINGS.

Where line crosses rivers, creeks or streams the trench shall be excavated a sufficient depth to admit placing the pipe when laid below the bed of the river, creek or stream for its perfect and complete protection, and in such manner as required by the engineer in charge of the work.

#### DRAINS.

Where the ditch crosses drains the same shall be put in as good condition as they were before the ditch was dug, and any damage sustained by land owners or tenants by reason of damaged drains shall be paid for by the first party.

#### FENCES.

All fences taken down by the first party for whatsoever purpose shall be replaced by them and left in as good condition as they were previous to the line being commenced, and any fences damaged or destroyed shall be replaced or paid for by the first party, it being distinctly understood that all damage sustained by reason of the digging of the trench, laying of the pipe, refilling the ditch 685 or hauling the pipe, except such as are covered by the right of way taken by first party for second party shall be settled by the first party.

#### LAYING THE PIPE.

The pipe, which is to be eight inches inside diameter, fitted with tapered screw joint, shall be laid in a first-class manner in every respect, and every joint shall be thoroughly screwed to place. After the pipe is laid it shall be tested and made tight as before specified under a gas or air pressure of 400 pounds to the square inch.

#### RE-ENFORCED JOINTS.

At all river, creek or stream crossings, when required by engineer, joints shall be strengthened or re-enforced by proper fittings furnished for the purpose. The fitting, labor and lead required in putting same in place shall be furnished and paid for by the first party.

#### SAFETY JOINTS.

At all points where the line runs along public highways or crosses the same, or runs adjacent to a farm house or buildings, when required by the engineer, safety joints shall be placed upon the line, if furnished for the purpose by the party of the second part, and the labor and lead required in putting same in place shall be furnished and paid for by first party.

#### BLOCKING.

Each length of pipe shall be thoroughly blocked if the ground is not perfectly solid, if so required by the engineer of the first party, so that it will have a firm, rigid foundation.

## TESTING.

The pipe shall be tested with gas or air to 400 pounds per square inch, and the time of making these tests and the manner of making them shall be decided upon by the superintendent of the first party.

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## TAMPING AND RE-FILLING THE DITCH.

When the pipe is laid and before being tested the filling between the joints to be thoroughly rammed underneath and around the sides of the pipe. When the joints are tested and found tight the earth to be thoroughly tamped underneath and on the sides of the joint so as not to give the pipe any chance to settle caused by the weight of the earth on top of the pipe.

After the ditch has been tamped in the above manner to the satisfaction of the superintendent of the first party, the ditch shall be filled in, and all of the material taken out of the ditch shall be placed either in or on the ditch.

All road crossings are to be filled and tamped to the surface of the ground. The tampers should be made of an iron blade seven inches long and five inches wide and one-half inch thick, having an iron handle attached thereto at least four feet long, and the blade to be slightly curved.

## PROTECTING DITCH.

All roads that are crossed by or run near the line are to be so protected as not to be dangerous to travel, and the first party is to become responsible for any accident that may occur by reason of said ditch not being protected by barricades, lanterns, etc., or by reason of the existence of the said ditch. All road crossings are to be bridged after being opened, and in no case is any road to be so obstructed as to entirely prevent travel.

## VALVES, FITTINGS, ETC.

Fittings and valves shall be placed in the line at such points as the first party's superintendent may direct, and after the line is tested boxes shall be placed over each valve of such size and character as the superintendent of the first party may direct and 687 no extra charge shall be made for the extra digging required to put said fitting, valve and boxes in line, and at such places as boxes are put over valves, the surplus earth shall be hauled away if the land owner or tenant so desires.

#### UNLOADING AND HAULING PIPE.

The first party will deliver the pipe and fittings on board cars at nearest railway stations along right of way as may be most convenient to said first party, and shall unload the cars and haul the pipe and fittings along the ditch where they may be required. All rights of way not covered by right of way agreements to be settled for by the said first party.

#### INJURY TO PERSONS OR PROPERTY.

In no case is the party of the second part to be held liable for any injury done to persons or property by reason of said work, and the said first party hereby agrees to become responsible for all claims for damages of whatsoever character done or occasioned by reason of the construction of this line.

#### TOOLS, MATERIAL, ETC.

The first party shall furnish all the lead blocking, tools, lumber, stone, kettles, derricks, picks and shovels, etc., necessary for doing all the work.

#### SUPERINTENDING OF WORK.

All of the above work shall be done to the satisfaction of the manager and the superintendent of the second party, and they shall have the right under this contract in case the first party delays or refuses to do the work which, under this contract, it is their duty to do, to have the said work done at the expense of the first party.

#### CHANGE OF ROUTE.

It is also agreed between the parties hereto that the said president of the second party may change the direction of the trench as at present staked out if he thinks proper to do so, but any claim for extra work done by reason of said change or for any other reason, must be presented to the superintendent of the party of the second part within five days from the time said work is done.

“ B ” 3.

#### SPECIFICATION.

For one of a group of six natural gas compressors for pumping station at Greentown, Ind.

at of  
filed  
1898.

## GENERAL PLAN.

The machine consists of a box-bed or frame having the steam cylinder at one end, the gas compressing cylinder at the other, the main shaft extending across the machine and having on it two fly-wheels—one on each end. The cross-head also extends across the bend and has a connecting rod on each end joined to crank-pins in the fly-wheels. This general type of compressor is largely employed by the builders, the Norwalk Iron Works Company.

## STEAM CYLINDER.

The steam cylinder is twenty-four inches in diameter and thirty inches stroke. The piston to have double outside rings, a single inside ring, and to be set out by C springs and jack colts. The cylinder-heads to have air space covers, and the outside head to be polished. The main steam valves to be of the long D pattern and cut off valves of the Mayer type to be used. The cut-off valves to be adjustable while the machine is in motion. The cylinder and sides of steam-chest to be covered with narrow, beaded, black walnut staves secured by brass covered screws. All piston-rods and valve-rods to be of steel. The steam supply pipe to be six inches, the exhaust eight inches.

## PRESSURE REGULATOR.

A pressure regulator to be furnished.

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## SPEED REGULATOR.

A centrifugal speed regulator to be furnished.

## CROSS-HEAD.

The cross-head to be swiveled in the center on the wrought iron coupling for piston rods.

## CONNECTING RODS.

The connecting rods to be of our standard pattern and to be furnished bright.

## MAIN SHAFT.

Of fine hammered iron, seven inches in diameter.



## FLY WHEEL.

Fly wheels are seven feet six inches in diameter.

One crank-pin is to extend beyond the connecting rod bearing to make provision for a drag-link connection to the other engine, should such connection hereafter be desirable.

## GAS CYLINDER.

The air cylinder to be 10-inch bore and 30-inch stroke. The movements of its piston are co-incident with the movements of the steam piston. The gas cylinder is surrounded by water jacket. The working barrel is to be of cast iron as hard as can be accurately bored. The piston valves and all parts are calculated for a working pressure of 525 pounds per square inch.

## VALVES.

The gas inlet valves are of forged iron, the valve, head and valve stem being in one piece. The valves are accessible from the outside without moving cylinder head. Valve guards to be of flanged boiler plate.

## STUFFING BOXES.

Stuffing boxes have seals outside of the stuffing box proper.

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## DUTY.

The capacity of the machine when supplied with gas of 165 pounds pressure above the atmosphere is 3,333,000 cubic feet of atmospheric bulk per twenty-five hours.

## PRESSURE.

The machine will take gas at 165 pounds pressure, and deliver it at 525 pounds pressure.

## POWER.

At the above mentioned work, it will use 250 horse power.

## INSTALLATION.

The accompanying plans of piping for engine house shows six machines of the above description in position with space, besides each one for another machine. This additional machine can be a duplicate of the one herein specified, or it can be adapted for tak-

ing gas at a low pressure and compressing it to 165 pounds, or it can be arranged to take gas from the machine herein described, and deliver such gas at 1,000 pounds or more.

E. HILL, *Treas.*

(The drawings appended are omitted. On the back of said Exhibit C is the following):

"Whereas, in the suit of Egbert Jamieson against the Indiana Natural Gas & Oil Company and the Columbus Construction Company, the Supreme Court of the State of Indiana has rendered a decision whereby it is declared that under the statute of said state the volume of gas which may be lawfully stored or transported in said state, shall not exceed a maximum of three hundred pounds pressure to the square inch.

"And, whereas, by said decision the volume of gas which may be lawfully stored or transported in pipes has been greatly reduced, and thereby it has become necessary to modify and amend Exhibit "C," referred to in and made a part of the contract between the said Indiana Natural Gas & Oil Company and the Columbus Construction Company, of date June 5, 1890.

Now, therefore, be it resolved, that the following drawings and specifications attached to this resolution and marked Exhibit "C" are hereby substituted for the original Exhibit "C," and the said drawings and specifications here shown are hereby agreed and declared to be Exhibit "C" mentioned in said contract, and said Exhibit "C" hereto attached is hereby agreed to, and made a part of said contract of date June 5, 1890."

Endorsed—Exhibit "C" referred to in contract between Indiana Natural Gas & Oil Company and Columbus Construction Company, 7/7/91. Chas. T. Yerkes, President Indiana Natural Gas & Oil Company. C. E. Hequembourg, President Columbus Construction Company.

32nd. That the said Circuit Court also erred upon the trial of this cause in that it excluded proof as to the laying of the so-called sample or test mile near Ainsworth in the spring of 1891, and the result of tests of that line after it was laid as to its capacity for holding air. The evidence thus excluded was sought to be drawn out by questions to one William Quinn after he had described the shipment of this pipe to Ainsworth, and stated that it was laid by men in the employ of the National Tube Works Company in 1891, and that he watched the laying of it as he was to conduct the test upon it. He was asked this question.

Q. "You may describe how it was laid?"

To that question the defendant interposed an objection which

was sustained by the court without prejudice to the right of  
692 the plaintiff to thereafter renew its offer of evidence on this  
point, and accordingly thereafter the plaintiff further interro-  
gated the witness after he had testified that this pipe was taken out  
and laid along the ditch preparatory to laying, as follows:

Q. "You may describe to the jury now the manner in which  
that pipe was laid on the right of way of the Columbus Construc-  
tion Company?"

(To this question the defendant objected, and the objection  
was sustained.)

Q. "I will ask you what you had to do, if anything, with  
the matter of the laying of that section of pipe?"

(To which question the defendant objected, and the objec-  
tion was sustained.)

Q. "After that pipe was laid on the line of the Columbus  
Construction Company, did you witness any tests made in line  
upon it?"

(To which question the defendant's objection was also sus-  
tained.)

Q. "Do you know what degree of pressure was applied to  
that line after it was laid in line and with what medium that press-  
ure was made?"

(The defendant's objection to this question was also sus-  
tained.)

Q. "What number of tests, if any, were made by you or  
under your supervision or did you witness upon that line of eight-  
inch National Tube Works pipe?"

(The defendant's objection to this question was also sus-  
tained, as were also objections to other questions to the  
witness as to whether he had reported the result of these  
tests to the National Tube Works Company and whether  
that company was then contemplating making a contract  
with the plaintiff company for furnishing pipe, and as to  
what that company did with reference to furnishing pipe  
after his report.)

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These further questions were also asked:

Q. "If, after witnessing any tests in line upon the pipe of  
the National Tube Works Company laid upon the right of way of  
the Columbus Construction Company at Ainsworth, Indiana, you  
found defects in the line under the pressure there applied, to what  
did you attribute those defects?"

(To this question also the defendant's objection was sus-  
tained.)

Q. "If you witnessed any test of the National Tube Works  
pipe in line at Ainsworth, Indiana, you may state the amount of

pressure placed upon the line and the medium with which the pressure was applied and the result thereof as to the number of leaks and the amount of leakage?"

(To this question also the objection of the defendant was sustained.)

Q. "From your knowledge of the manufacture of eight-inch standard line pipe in the mills of the National Tube Works Company during the years 1890 and 1891, how did the pipe shipped to the line of the right of way of the Columbus Construction Company at Ainsworth, Indiana, in 1890, compare with the eight-inch standard line pipe manufactured by said company in the year 1890?"

(To this question also the defendant's objection was sustained.)

Q. "How did the pipe shipped to the right of way of the Columbus Construction Company and laid in line near Ainsworth, Indiana, in 1891, compare in manufacture and character with the pipe shipped by the National Tube Works Company to the Crane Company for the Columbus Construction Company under the Crane contract in the year 1890?"

(To this question also the defendant's objection was sustained.)

694 Henry Coyle was also interrogated upon this matter in rebuttal, the defendant having offered evidence tending to prove that some pipe delivered at Ainsworth in 1890 was handled with much greater care than that delivered in 1892. Mr. Coyle testified that this pipe was the mile of eight-inch National Tube Works pipe shipped to Ainsworth and laid in the test line about three-quarters of a mile. He was then asked these questions:

Q. "And was that pipe laid at that time with the collars which came on it, the standard line collars?"

To which question the defendant's objection was sustained by the Court.

Q. "I will ask the witness, for the purpose of raising the question now, to state whether or not that line was tested under air pressure as he has already testified to, and if so, to state when?"

To this question also the defendant's objection was sustained.

Q. "I will ask you, Mr. Coyle, what was the result of these tests as to showing leakage, and to what extent?"

To which question also the defendant's objection was sustained.

The deposition of James Campbell offered by the plaintiff was objected to by the defendant upon the ground that it referred, so

far as material, only to the manufacture and testing of the so-called test line of pipe, the testimony of William Quinn, as to the laying and testing of which had been already, on the motion of the defendant, excluded by the court on the ground that it related to matters collateral to the issue on trial in this cause and was not material, and the court accordingly excluded the deposition of said Campbell upon this objection of the defendant, and upon like objection also excluded the deposition 695 of John Perron, which also was offered by the plaintiff. These depositions are found in full in the record, but are not here more fully stated.

33rd. That the said Circuit Court also erred in admitting the testimony of Charles F. Foster, J. C. Kilgore, Lyman E. Cooley and George H. Reynolds, witnesses called for the defendant, over the objection of the plaintiff, as to certain experiments conducted upon seven standard pipe line collars known in the testimony as the Kaufman collars, which were collars that came on the pipe delivered by the Crane Company to the Columbus Construction Company, and had been afterwards removed and had been sent to Chicago, and were during the trial in the court room. These witnesses testified, over the objection of the plaintiff, that these collars were taken to the Judd street shop of the defendant; that seven short pieces of pipe, the threads upon which had been cut at the Crane Company's shops, which pipe was purchased in Chicago here by the Crane Company, were screwed into these collars, and that during the first day of these experiments the line thus constructed was made tight under a pressure of one thousand pounds of water, and during the next day was tested and found to be absolutely tight at nine hundred and twenty-five pounds air pressure, the highest air pressure which they were capable of producing.

Therefore, the said Columbus Construction Company, plaintiff in error, prays that for the errors above assigned said judgment of the Circuit Court of the United States for the Northern District of Illinois may be reversed, annulled and for nothing esteemed, and that this cause may be remanded to said Circuit Court with proper direction to that court in the premises.

J. R. CUSTER,  
S. S. GREGORY,

*Attorneys for Columbus Construction Company,  
Plaintiff in Error.*

(Endorsed): Filed Aug. 18, 1898.

S. W. BURNHAM, *Clerk.*

717 On the twenty-seventh day of September, 1898, came the Columbus Construction Company, as principal, and Jacob R. Custer and Joseph A. Griffin, as sureties, and filed in the clerk's office of said court a certain appeal bond; which said appeal bond is in the words and figures following, to wit;

718 Know all men by these presents that we, the Columbus Construction Company, a corporation organized under the laws of the State of New Jersey, as principal, and Jacob R. Custer and Joseph A. Griffin, as sureties, are held and firmly bound unto the Crane Company, a corporation organized under the laws of the State of Illinois, in the full and just sum of fifteen hundred dollars, to be paid to the said Crane Company, its certain attorney, successors, or assigns; for which payment, well and truly to be made, we bind ourselves, our successors, heirs, executors, and administrators respectively, jointly, severally, and firmly, by these presents.

Sealed with our seals and dated this 27th day of September, in the year of our Lord one thousand eight hundred and ninety-eight.

Whereas lately, at a regular term of the Circuit Court of the United States for the Northern District of Illinois, in a suit depending in said court between The Columbus Construction Company, plaintiff, and The Crane Company, defendant, a judgment was rendered against the said Columbus Construction Company, and the said Columbus Construction Company having obtained a writ of error and filed a copy thereof in the clerk's office of the said court to reverse the judgment in the aforesaid suit, and a citation, directed to the said Crane Company, citing and admonishing it to be and appear at the Supreme Court of the United States, at Washington, within 30 days from the date thereof:

Now, the condition of the above obligation is such that if the said Columbus Construction Company shall prosecute its writ to effect and answer all costs if it fail to make its plea good, then the above obligation to be void; else to remain in full force and effect.

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[SEAL.]

COLUMBUS CONSTRUCTION Co.,

By FRANK S. HASTINGS,

*Its Vice-President.*

JACOB R. CUSTER.

[SEAL.]

JOSEPH A. GRIFFIN.

[SEAL.]

Sealed and delivered in presence of—

Attest: B. T. KENNEDY,

*Secretary.*

Approved by—

JOHN W. SHOWALTER,

*Circuit Judge.*

The sureties on this bond are satisfactory.

September 27th, A. D. 1898.

WING & CHADBOURNE,

*Attorneys for Defendant in Error.*

(Endorsed): Filed Sep. 27, 1898.

S. W. BURNHAM, *Clerk.*

*Writ of Error.*

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720 On the same day, to wit, the twenty-seventh day of September, in the July term of said court, 1898, in the record of proceedings thereof in said entitled cause, before the Hon. John W. Showalter, circuit judge, appears the following entry, to wit :

ORDER OF SEPTEMBER 27, 1898.

UNITED STATES CIRCUIT COURT, NORTHERN DISTRICT OF ILLINOIS,  
NORTHERN DIVISION.

TUESDAY, September 27, 1898.

Present : Hon. John W. Showalter, circuit judge.

Columbus Construction Company }  
  *vs.*  
Crane Company. }

The plaintiff having heretofore filed its petition for a writ of error and assignments of errors, together with its bond in the sum of fifteen hundred dollars, which has been duly taken and approved by the judge signing the citation—

It is thereupon ordered that a writ of error issue herein, returnable in thirty days to the Supreme Court of the United States, but that said bond shall not operate as a supersedeas.

721 UNITED STATES OF AMERICA, ss.

*The President of the United States to the Honorable the Judges of the Circuit Court of the United States for the Northern District of Illinois,*  
GREETING :

Because in the record and proceedings, as also in the rendition of the judgment of a plea which is in the said Circuit Court, before you or some of you, between The Columbus Construction Company, plaintiff, and The Crane Company, defendant, a manifest error hath happened, to the great damage of the said Columbus Construction Company, as by its complaint appears, we, being willing that error, if any hath been, should be duly corrected and full and speedy justice done to the parties aforesaid in this behalf, do command you, if judgment be therein given, that then, under your seal, distinctly and openly, you send the record and proceedings aforesaid, with all things concerning the same, to the Supreme Court of the United States, together with this writ, so that you have the same in the said Supreme Court, at Washington, within 30 days from the date hereof, that, the record and proceedings aforesaid being inspected, the said Supreme Court may cause further to be done



therein to correct that error what of right and according to the laws and customs of the United States should be done.

Witness the Honorable Melville W. Seal of Circuit Court U. S., Fuller, Chief Justice of the United States, Northern Dist. Illinois, the 27th day of September, in the year of our Lord one thousand eight hundred and 1855. ninety-eight.

S. W. BURNHAM,  
*Clerk of the Circuit Court of the United States  
for the Northern Dist. of Illinois.*

Allowed by—

JOHN W. SHOWALTER, *Judge.*

[Endorsed]: Original. Supreme Court of the United States. Columbus Construction Company *vs.* Crane Company. Writ of error. Filed Sep. 27, 1898.

S. W. BURNHAM, *Clerk.*

Copy deposited for the defendant in error in the clerk's office, U. S. Circuit Court, Northern District of Illinois.

NORTHERN DISTRICT OF ILLINOIS, ss:

In obedience to the within writ, I herewith transmit to the Supreme Court of the United States a true and complete transcript of the record and proceedings in the foregoing-entitled cause this 25th day of October, A. D. 1898.

S. W. BURNHAM,  
*Clerk United States Circuit Court,  
Northern District of Illinois.*

A copy of the within writ of error was filed in my office on the 27th day of September, A. D. 1898.

S. W. BURNHAM, *Clerk.*

722 NORTHERN DISTRICT OF ILLINOIS, }  
NORTHERN DIVISION, } ss.

I, S. W. Burnham, clerk of the Circuit Court of the United States for said Northern District of Illinois, do hereby certify the above and foregoing to be a true and complete transcript of the record of all the proceedings had in said court up to and including the final judgment in said cause, together with the petition for writ of error and the assignment of errors and the order of court allowing writ of error and the bond on writ of error, wherein The Columbus Construction Company is the plaintiff and The Crane Company is the defendant, as the same

*Citation.*

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appear from the records and files of said court now remaining in my custody and control.

In testimony whereof I have hereunto set my hand and affixed the seal of said court, at my office, in the city of Chicago, in said district, this — day of October, 1898.

S. W. BURNHAM, *Clerk.*

723 UNITED STATES OF AMERICA, ss.

*To the Crane Company, GREETING :*

You are hereby cited and admonished to be and appear at a Supreme Court of the United States, at Washington, within 30 days from the date hereof, pursuant to a writ of error filed in the clerk's office of the Circuit Court of the United States for the Northern District of Illinois, wherein The Columbus Construction Company is plaintiff in error and you are defendant in error, to show cause, if any there be, why the judgment rendered against the said plaintiff in error, as in the said writ of error mentioned, should not be corrected and why speedy justice should not be done to the parties in that behalf.

Witness the Honorable John W. Showalter, judge of the Circuit Court, this 27th day of September, in the year of our Lord one thousand eight hundred and ninety-eight.

JOHN W. SHOWALTER,  
*Circuit Judge.*

We hereby accept service of this citation this 27th day of September, 1898.

R. M. WING,  
T. L. CHADBOURNE, Jr.,  
*Attorneys for Defendant in Error.*

[Endorsed]: Supreme Court of the United States. The Columbus Construction Company *vs.* The Crane Company. Citation. Filed Sep. 27, 1898.

S. W. BURNHAM, *Clerk.*

Endorsed on cover: Case No. 17,047. N. Illinois C. C. U. S. Term No., 462. The Columbus Construction Company, plaintiff in error, *vs.* The Crane Company. Filed October 27th, 1898.